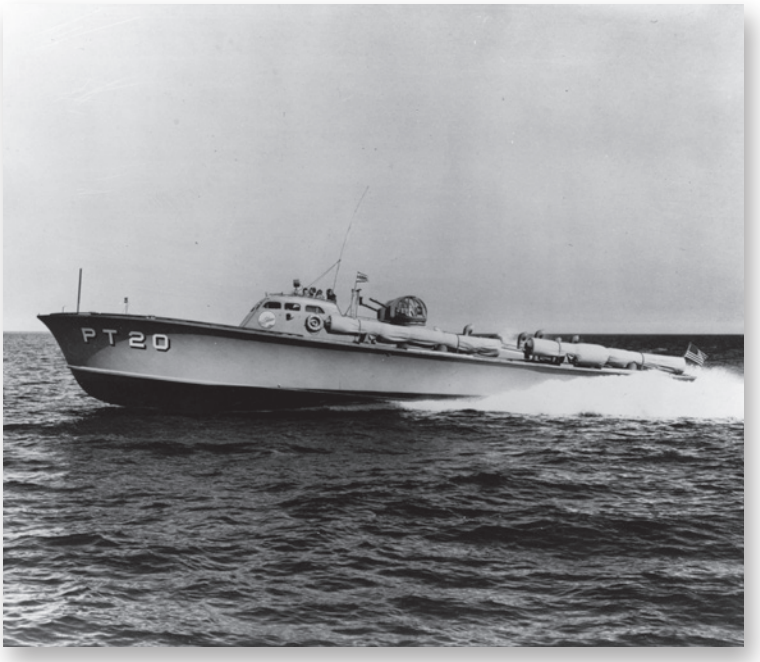
USN PT BOAT VS IJN DESTROYER

Tokyo Express 1942–43

MARK STILLE

USN PT BOAT VS IJN DESTROYER

Tokyo Express 1942–43



MARK STILLE

CONTENTS

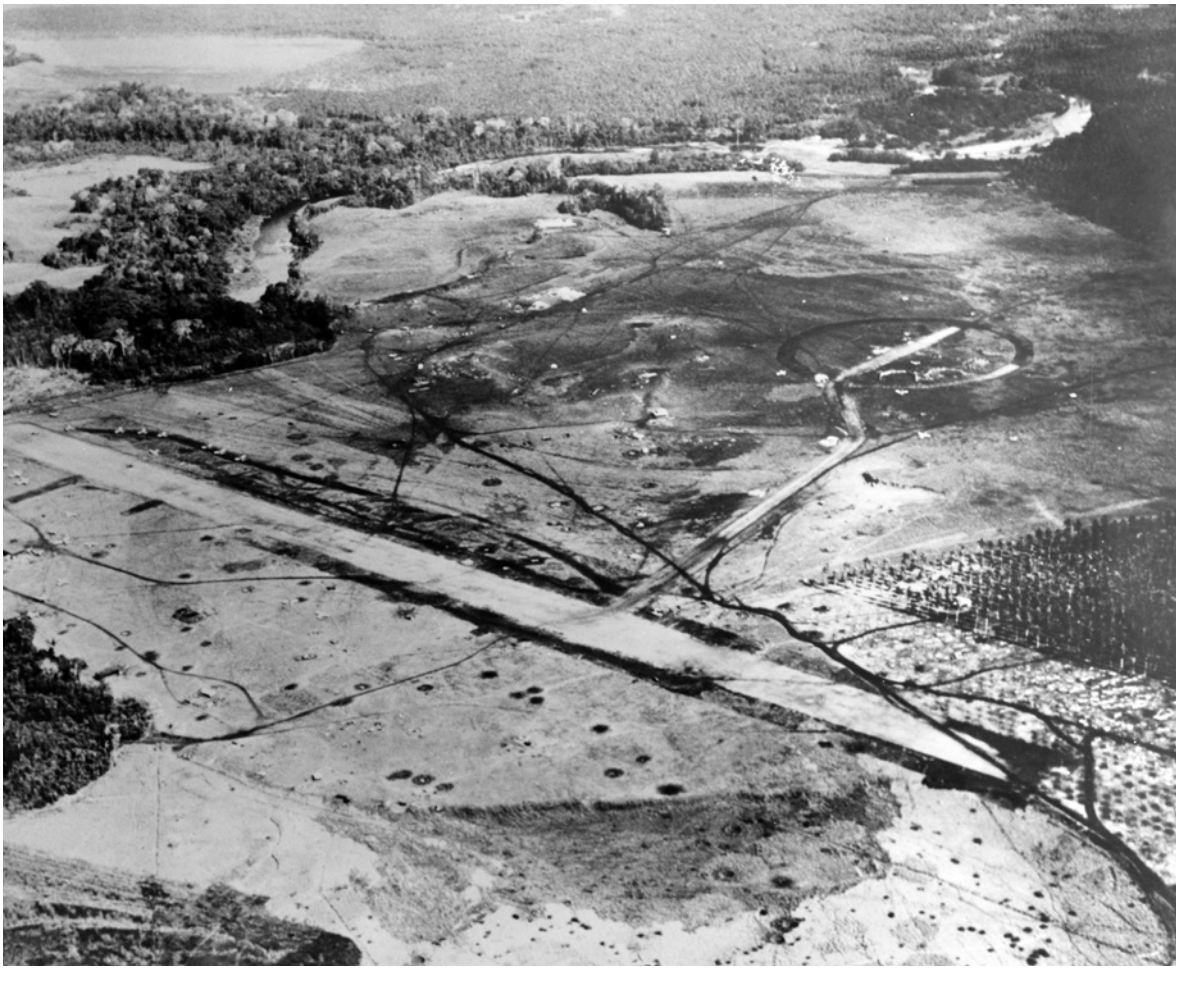
Introduction	4
Chronology	7
Design and Development	8
Technical Specifications	18
The Combatants	35
The Strategic Situation	49
Combat	53
Analysis	72
Aftermath	75
Bibliography	79
Index	80

INTRODUCTION

The struggle between American and Japanese forces for Guadalcanal, largest of the six main islands in the Solomon Islands, was a key point in the Pacific War, but it is little known that United States Navy (USN) PT boats were first used in significant numbers during this campaign. The principal opponents of the boats were Imperial Japanese Navy (IJN) destroyers renowned for their night-fighting capabilities and well-trained crews. The duel between these two asymmetrical opponents makes for a compelling story.

During the Guadalcanal and Solomons campaign, from mid-1942 to mid-1943, the IJN's destroyer force was instrumental in moving and supplying Japanese ground forces. The destroyers possessed a combination of speed and combat capabilities that made them ideal for this mission. The regularity of these missions, first seen during the Guadalcanal campaign, prompted the Americans to refer to these nocturnal runs as the "Tokyo Express." The USN was hard-pressed to disrupt these supply missions. Though the Americans ruled the air during this period, IJN destroyers were fast enough to complete their mission during the hours of darkness and then get out of air range by daylight the following morning. When the USN attempted to use cruisers and destroyers to stop the Tokyo Express, the result was often a costly failure. Reluctant to risk large ships at night, the USN turned to fast and powerfully armed PT boats. These small craft were expendable and did enjoy some success against the Japanese, particularly when the latter were forced to resort to using small barges for supply missions.

Faced with the possibility of air and surface attack, and forced to contend with increasingly aggressive attacks by PT boats, the Tokyo Express was compelled to adapt its tactics. Operating at night gave them a large degree of cover; but when PT boats arrived at Tulagi Island, across Iron Bottom Sound to the north of Guadalcanal, the



The reason that the Tokyo Express was instituted was American control of the air. This photograph shows Henderson Field, the name given to the Japanese-built airfield on Guadalcanal after its capture by American forces in August 1942, possession of which gave the Americans the essential element of victory during the Guadalcanal campaign. (NHHC 80-G-16312)

Japanese faced another complication. At first, the IJN destroyers would slip into a cove and unload their cargo using small boats. This became too dangerous, however, and later the IJN was forced to resort to delivering supplies in steel drums dropped offshore and towed ashore by men of the island's garrison. Such techniques were unable to deliver supplies in the required quantities, however, and by late in the campaign the garrison was reduced to near-starvation.

Armed with unreliable torpedoes and deployed in numbers insufficient to make a significant impact, PT boats were unable to derail the Tokyo Express during the Guadalcanal campaign. Though PT tactics were ineffective against the much more powerful IJN destroyers, the PT boat skippers did score occasional successes, sinking one IJN destroyer and damaging another. The small, fast boats were also ideal for shooting-up Japanese supply drums.

As the campaign moved into the Central Solomons, the Japanese still relied on IJN destroyers to move men and supplies to forward garrisons. Having gained a naval advantage, the USN attempted to disrupt the buildup of Japanese forces on New Georgia Island and other Japanese strongholds by using cruisers and destroyers, but this approach resulted in heavy losses at the hands of IJN destroyers. After the large

A classic image of an Elco PT boat at speed. No other vessel in the USN was as heavily armed for its size. This boat carries four torpedo tubes, two 20mm cannons, and four .50-caliber machine guns. (NHHC NH 44451)

ships took over the responsibility for interdicting the Tokyo Express, PT operations increasingly focused on attacking Japanese barge traffic. On the one occasion during the Central Pacific campaign that a large number of PT boats were used against IJN destroyers, however, the result was total failure; but though they were unable to contend with destroyers, the boats proved themselves to be useful weapons in littoral areas and remained active for the remainder of the Pacific War.

With the introduction of the Asashio class in 1937, the IJN returned to building large destroyers. This is the lead ship in July of that year on sea trials. Note the powerful armament of three twin 5in mounts and two quadruple 24in torpedo mounts. The subsequent Kagerō and Yūgumo classes were built to the same basic design. (Yamato Museum 071711)

CHRONOLOGY

1942

July 27 MTBRON 3 is re-formed in Panama with eight boats.

August 25 In the Battle of the Eastern Solomons, air attacks force a Japanese convoy to abandon its mission to deliver troops to Guadalcanal, compelling the Japanese to resort to other methods to move men and supplies to the island.

August 28 First Tokyo Express run is unsuccessful.

August 29 Second Tokyo Express run delivers 750 men to Guadalcanal; regular Tokyo Express missions follow through September and October.

September 4–5 An IJA barge run to Guadalcanal ends in a fiasco leaving IJN destroyers as the only viable method to move men and supplies to the island.

October 12 Four PT boats arrive at new base on Tulagi Island.

October 13 First PT operation against Tokyo Express ends indecisively.

October 22 PT boat tender *Jamestown* arrives at Tulagi.

October 25 Four more PT boats arrive at Tulagi.

October 29/30 Six PT boats are sent to attack the Tokyo Express; neither side suffers losses and the Japanese deliver men and supplies to Guadalcanal.

November 5/6 Four PT boats sortie to intercept the Tokyo Express; the Japanese mission is successful, with no losses suffered by either side.

November 8 Destroyer *Mochizuki* is hit by a dud torpedo launched from a PT boat.

November 22–25 MTBRON 2 arrives with eight PT boats.

November 29 Japanese use drum delivery method for the first time.

December 7 PT boats force a critical Tokyo Express mission to be abandoned.

December 9 Two PT boats sink IJN submarine *I-3* off Guadalcanal.

December 12 Destroyer *Teruzuki* is torpedoed and sunk by PT boats; *PT-44* is sunk by gunfire, the first Tulagi-based PT boat to be lost.

1943

January 10 Destroyer *Hatsukaze* is damaged by a PT boat torpedo.

February 1–2 First Japanese evacuation mission from Guadalcanal is successful. Of 11 PT boats committed to stop it, three are lost. Destroyer *Makigumo* hits a probable mine and is lost.

February 4–7 Second and third Japanese evacuation missions proceed successfully without PT opposition.

July 2 American forces land on New Georgia Island; Tokyo Express runs begin to neighboring Kolombangara Island.

August 1–2 A total of 15 PT boats are committed against four IJN destroyers without success; *PT-109* is lost.

DESIGN AND DEVELOPMENT

THE USN PT BOAT

The USN was slow to adopt the concept of a fast motorboat armed with torpedoes, but when it did, it did so in a big way. By 1945, no other navy in the world had as many motor torpedo boats in operation.

The entire concept of a motor torpedo boat was made possible by the invention of the torpedo. First introduced in 1868, the torpedo was a weapon of great promise. Because it struck the target below its waterline, the potential for damage was greater than a shell hitting the upper part of the ship. Damage below the waterline let water into the ship, resulting in flooding of critical spaces and possibly leading to the loss of the ship. With this in mind, naval powers of the day developed torpedo boats to carry and launch the new weapon. Marrying the torpedo to a fast platform to carry and launch it was a much cheaper method to generate naval power than building a battle fleet. Given the limited range of these small craft, however, early torpedo boats were used in a defensive capacity, usually preferred by inferior naval powers to create potential danger to the battle fleets of stronger powers.

In 1887, the USN purchased its first torpedo boat, the 31-ton 94ft *Stiletto*, from the Herreshoff Manufacturing Company of Bristol, Rhode Island. It carried only a single stern-mounted torpedo tube and was not considered a success. Not until 1890 did the USN complete its own first torpedo boat. Carrying three torpedo tubes, USS *Cushing* was 140ft long, displaced 116 tons, and could steam at 23kn. The USN was

happy with this design, so ordered another 34 torpedo boats through 1902. Short-ranged torpedo boats were not suitable for a navy with missions and aspirations far from American shores, however. To counter torpedo boats, other navies were developing "torpedo boat destroyers," which evolved into multi-mission, oceangoing destroyers. The USN duly abandoned further development of torpedo boats in favor of more capable destroyers.

Meanwhile, several European naval powers developed a smaller version of torpedo boats in the form of motor torpedo boats. The concept of a small craft capable of high speeds and carrying torpedoes was proven by the success of Italian Royal Navy motor torpedo boats against the Austro-Hungarian Navy in the Adriatic Sea during World War I. After the war, Britain's Royal Navy used motor torpedo boats with success against the Soviet Navy in the Baltic Sea. Despite these successes, the USN preferred to stay with destroyers.

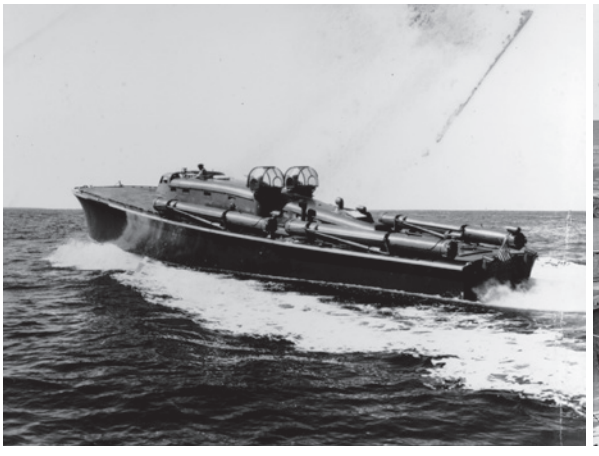
In the mid-1930s, the USN took a further look at motor torpedo boats. Though clearly short-ranged craft, they were deemed suitable for defense of the Philippines against the Japanese and to protect forward naval bases in the Pacific Ocean, thus releasing larger ships for offensive duties. The USN also noted the progress European navies had made with the development of motor torpedo boats and did not want to ignore their potential.

In May 1937, Secretary of the Navy Claude A. Swanson approved the recommendation of the General Board (responsible for approving ship designs) to begin work on a motor torpedo boat program. Funding was still required to make this a reality, but the program soon gained a powerful advocate. President Franklin D. Roosevelt was a keen observer of naval issues, and he was convinced that the concept of motor torpedo boats had merit. His backing insured a $15 million appropriation for experimental vessels in the FY 1938 naval budget – money to be spent at his discretion. Subsequently, in July 1938 the USN issued a requirement to private firms for designs of a 70–80ft torpedo boat and a 54–60ft torpedo boat. Each boat had to carry two torpedoes, depth charges, and .50-caliber machine guns. Each boat also had to have a top speed of 40kn; the larger one had to have a cruising radius of 550NM, the smaller one a cruising radius of 240NM.

By the time the competition closed in September 1938, 13 designs for the larger boat and 24 designs for the smaller boat had been submitted. Five of the large-boat

ABOVE LEFT
The first *PT-6* was built by Higgins Industries to a Sparkman & Stephens design. It was never placed in USN service, however, and was sold to Finland. The second *PT-6*, shown here in the spring of 1941, was another Higgins-designed PT boat built to Andrew J. Higgins's own design and delivered in February 1941. It competed in the "Plywood Derbys" and was judged to be an excellent design. (NHHC NH 100907)

ABOVE RIGHT
PT-9, first of the Elco 70ft PT boats, is shown here in the summer of 1940. Originally assigned to MTBRON 1 when the squadron was commissioned in July 1940, *PT-9* was later transferred to MTBRON 2. Note the streamlined appearance and the Plexiglas blisters on the two .50-caliber machine-gun turrets. The blisters were removed on later boats. (NHHC NH 44480)



ABOVE LEFT
After arriving from Britain in September 1939, Hubert Scott-Paine's 70ft motor torpedo boat was designated *PT-9*. During demonstrations by the designer himself, the USN was convinced of its suitability. *PT-9* was the forerunner of all Elco PT boats that entered service in World War II. (NHHC NH 85182)

ABOVE RIGHT
Eight of the ten Elco 70ft PT boats of the first MTBRON 2 are shown in this view in January 1941 at the Washington Navy Yard. The boats were en route to the Caribbean from Newport, Rhode Island, for extended sea trials. After these were completed, all ten of the boats were transferred to the Royal Navy. (NHHC NH 44948)

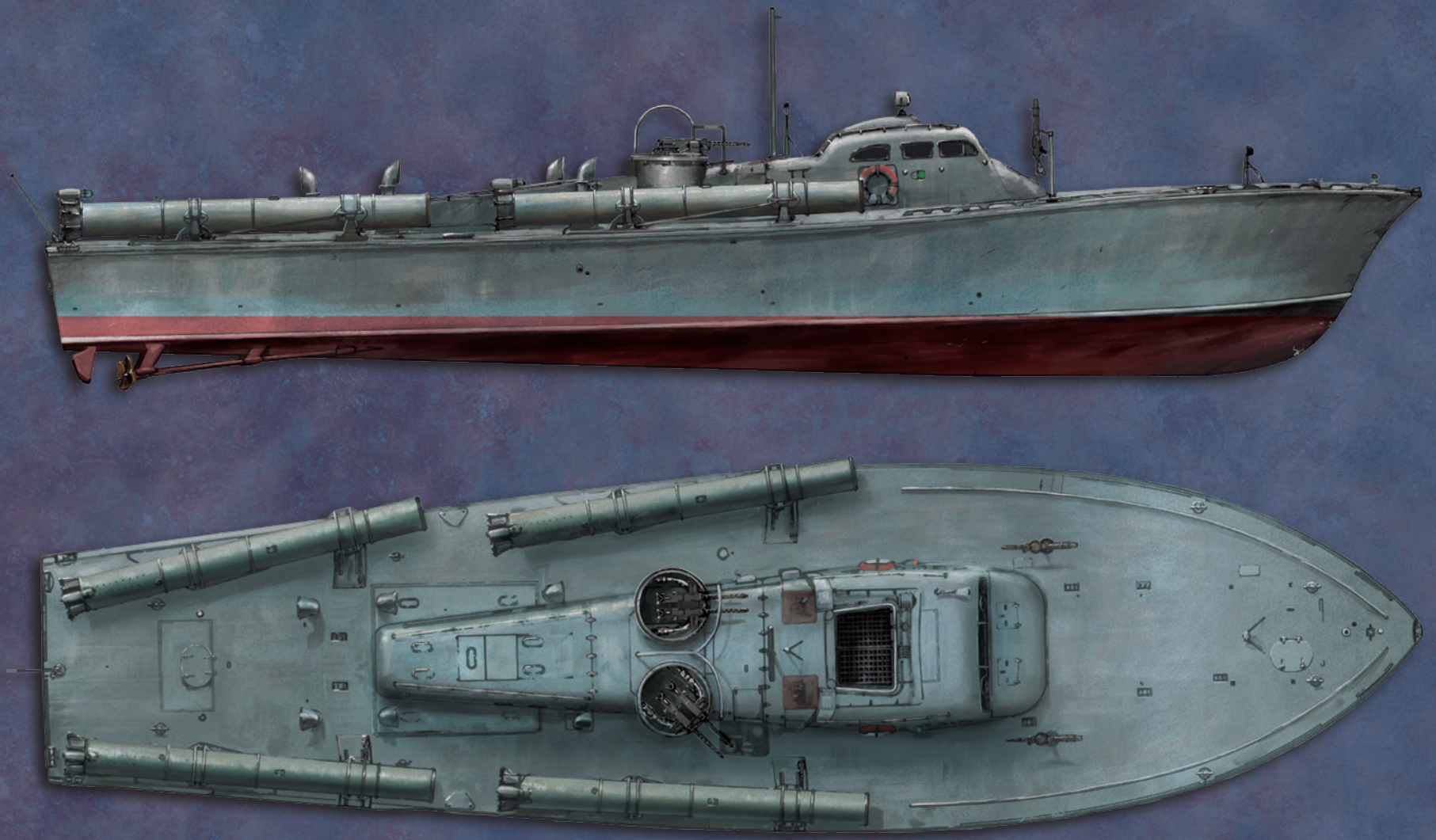
and three of the small-boat designs were selected for which the USN requested more data. In March 1939, a 70ft design from sailboat designers Sparkman & Stephens of Newport, Rhode Island, and a 54ft design from Professor George Crouch were declared the winners.

With these two designs having been selected, the USN contracted with various yards to build the boats. Four 58ft boats were built to the Crouch design, two (*PT-1* and *PT-2*) by the Fogal Boat Yard in Miami and two (*PT-3* and *PT-4*) by the Fisher Boat Works in Detroit. The Higgins Industries yard in New Orleans built two 81ft boats (*PT-5* and *PT-6*) to a modified Sparkman & Stephens design. Finally, two 81ft boats (*PT-7* and *PT-8*) were built by the Philadelphia Navy Yard to a design from the USN's Bureau of Ships. The designation PT (patrol torpedo boat) was given to these craft: a patrol craft (P) that carried one or more torpedoes (T). Being small craft, PT boats were only given numbers, not names.

A late addition in the torpedo boat competition came from Britain in the form of powerboat racer Hubert Scott-Paine's design of a 70ft motor torpedo boat, which had already been ordered by the Royal Navy. The American Electric Boat Company (Elco) of Bayonne, New Jersey, was aware of this design and others for the Royal Navy but judged the Scott-Paine design to be the best. With President Roosevelt's personal approval, Elco purchased the manufacturing rights for the design in June 1939. One was acquired from Britain and arrived in September 1939. Designated *PT-9*, it was demonstrated successfully by Scott-Paine himself in trials for USN officers.

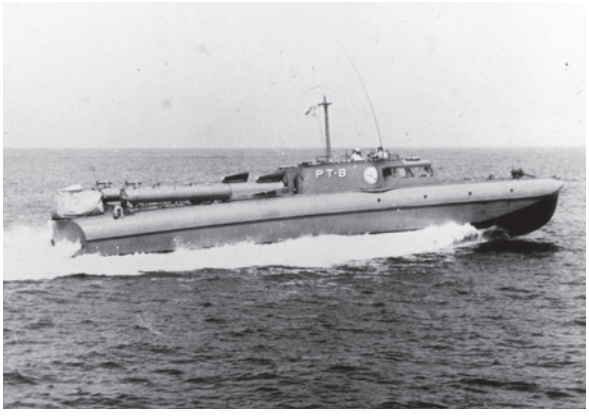
With the opening of war in Europe, the USN was anxious to begin building PT boats. To do so, Roosevelt approved using the unused funds from the PT boat competition to order a batch of 23 boats from Elco based on the PT-9 design: 11 of the 23 were PT boats, with the other 12 carrying extra depth charges in lieu of torpedoes to chase submarines. The only major difference from the original British design was the substitution of Packard engines for Rolls-Royce engines.

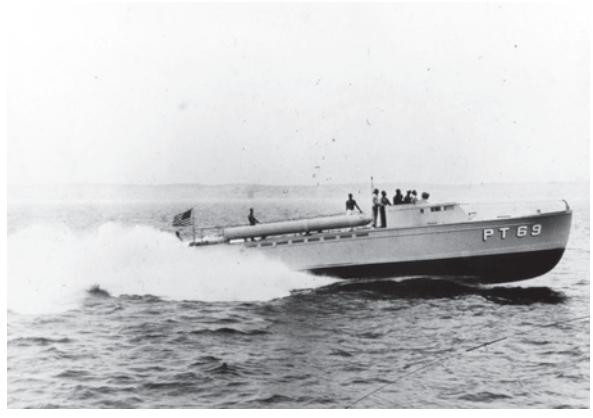
During November and December 1940, the first ten Elco 70ft PT boats (*PT-10* through *PT-19*) were delivered to the USN, forming Motor Torpedo Boat Squadron (MTBRON) 2. The entire squadron was put through extended sea trials in late 1940. The Elco-built boats performed fairly well, but their design was to prove inadequate when the USN decided that all PT boats needed to accommodate four torpedo tubes.



ELCO 77FT PT BOAT

The first USN PT boats to deploy to Guadalcanal were Elco 77ft boats. Each was fitted with four torpedo tubes but only a basic gun armament of four .50-caliber machine guns.





ABOVE LEFT
Experimental PT boat *PT-8* was built in the Philadelphia Navy Yard to a USN design. Unlike every other PT boat, *PT-8* had an aluminum hull; but because the boat was overweight and powered by unreliable engines, it did not meet its design speed and the design was not considered successful. *PT-8* survived the war and was used afterward for developmental work.
(NHHC NH 10090)

ABOVE RIGHT
Another experimental PT boat was *PT-69*, built by the Huckins Yacht Corporation of Jacksonville, Florida, to compete in the July 1941 "Plywood Derbys." It was successful enough that the USN contracted for additional boats to be built to a modified design. *PT-69* was also bought, but never saw service in a USN motor torpedo boat squadron and was eventually reclassified as a yard craft in September 1942 before being sold in 1947.
(NHHC NH 100909)

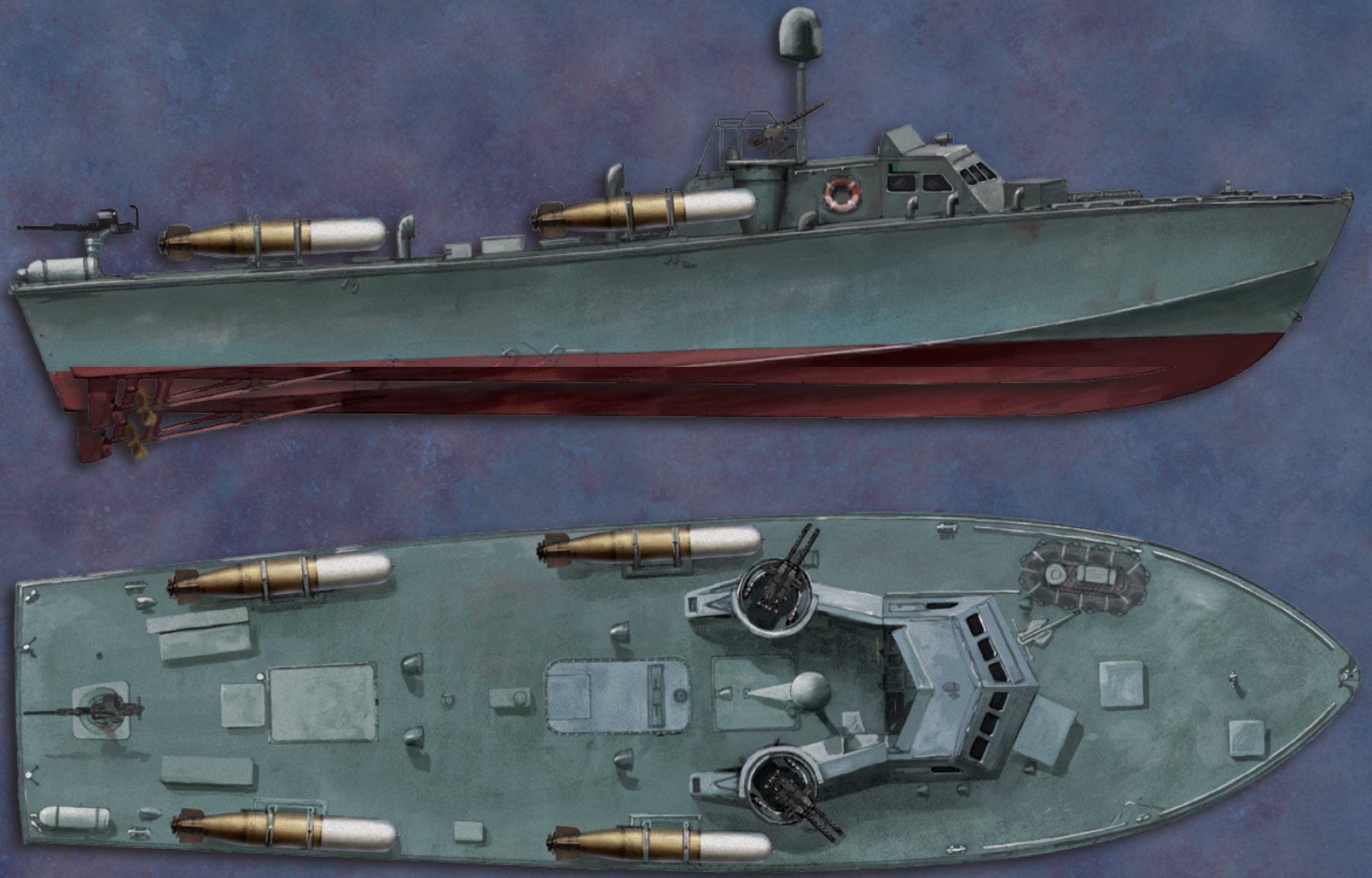
This doomed the Elco 70ft design as it was determined that four tubes was too much of a load for a boat of this size, and the boats were transferred under Lend Lease to the Royal Navy. To meet the new requirement, Elco went to work on a 77ft design.

It was fortunate that Elco's production of the British design was successful, because the American designs all had problems: *PT-1* and *PT-2* were delayed until December 1941 due to bad engines; *PT-3* and *PT-4* were judged to be too small; *PT-5* was a poor performer; *PT-6* was sold to Finland; and the boats designed by the USN, *PT-7* and *PT-8*, were also failures. *PT-3* through *PT-7* were all sent to Britain under Lend Lease.

Elco produced an improved version of its 70ft PT boat, this being a 77ft version that was able to comfortably carry four torpedo tubes. The USN quickly awarded Elco a contract for 49 boats (*PT-20* through *PT-68*). The Elco 77ft PT boat was destined to join a new design from Higgins to become the USN's mainstay motor torpedo boat. At his own expense, Andrew J. Higgins designed an 81ft PT boat that he delivered in February 1941. The boat was designated *PT-6* and was quickly recognized as being an excellent design.

With the benefit of experience gained from the first-generation PT boats and a deadline looming to select designs for mass production, in July and August 1941 the USN invited all firms involved in PT boat design to take part in a series of endurance tests in Long Island Sound. Each design had to complete a 190NM high-speed endurance test. The boats were being evaluated not only for speed, but for durability and maneuverability. Contenders included prototypes from Elco, Higgins, the Huckins Yacht Corporation of Jacksonville, Florida, and *PT-8* from the Philadelphia Navy Yard. The event was given the unofficial nickname "The Plywood Derbys."

The winner of the trials was *PT-20*, the first of the Elco 77ft PT boats. Higgins's 78ft *PT-70* was also impressive. *PT-69*, the Huckins 72ft PT boat, showed enough promise to generate a contract for 18 boats to be used for training and coastal patrol duties. Overall, the most promising boats emerging from the contest were the Elco design and the Higgins 78ft design. In particular, the Higgins boat was praised for its smooth handling. After some final tweaks prompted by the USN's requirement for a larger PT boat to carry more ordnance, both firms were given contracts for mass production. Elco was awarded a contract to build 36 of its slightly enlarged 80ft design in Bayonne, while Higgins began production of 24 of their 78ft design in New Orleans.



HIGGINS 78FT PT BOAT

Beginning in 1943, Higgins 78ft PT boats began to reach the Pacific. Note the significant upgrades in these boats including the substitution of 22.5in Mk XIII torpedoes, the addition of an SO type air/surface search radar, and a 20mm gun mount aft.

IJN DESTROYERS

The IJN was hyper-focused on fighting and winning a decisive battle against the USN. To do so, it developed an intricate and eventually choreographed battle plan aimed at defeating the larger USN battle fleet. To compensate for its numerical inferiority in ships, the IJN devised a strategy and a series of tactics to inflict attrition on the USN prior to the decisive battle. The most important attrition tactic was sustained night attacks on the USN fleet by specially trained cruisers and destroyers. Working together, these elements would penetrate the screen of the USN fleet and launch devastating torpedo attacks on its capital ships. This was the basis for interwar training and the design of IJN destroyers. Though the decisive fleet action between the IJN and the USN never unfolded in the manner so intensively rehearsed by the IJN, many of the aspects of this training proved very useful in the opening year of the war against USN fleet units.

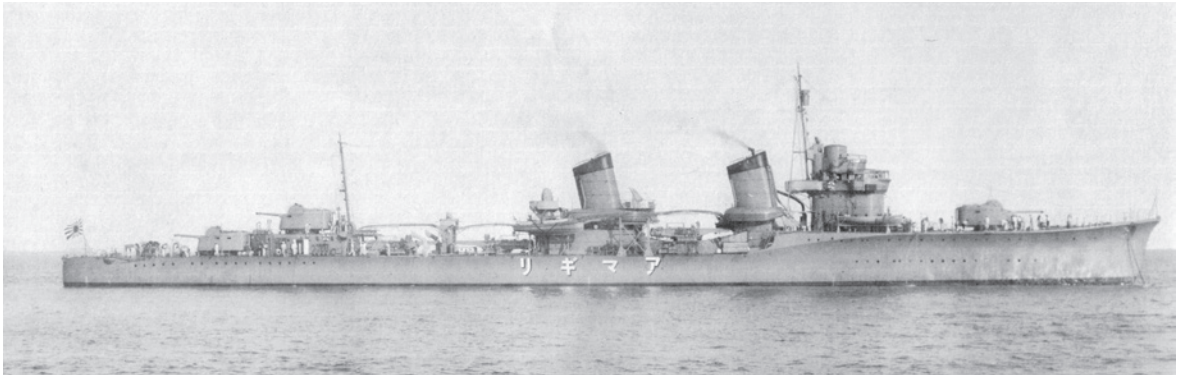
During the Russo-Japanese War of 1904–05, the IJN used its torpedo boats with some success. This reinforced the Japanese perception that torpedo boats were an important component of the fleet. The notion of a small craft armed with torpedoes being able to sink a major enemy ship by mounting a dashing attack was well received by the IJN with its predilection for individual combat.

The IJN torpedo boats of the Russo-Japanese War grew into large destroyers in World War I. In order to accomplish their mission, and to compensate for any numerical inferiority, the Japanese migrated toward building large destroyers; though based on British and German designs, these were fitted with more offensive firepower than their foreign contemporaries. With IJN destroyers expected to play an important role in the pre-decisive battle attritional attacks, the primary design emphasis was on a heavy torpedo battery; but while torpedoes were the primary weapon, IJN destroyers also carried a heavy gun battery. In addition to their heavy armament, IJN destroyers had to possess the ability to steam at high speed – an essential tactical requirement during torpedo combat.

This photograph of *Fubuki* was taken in March 1936 after reconstruction. The Fubuki class was the first large IJN destroyer class and was revolutionary when it first entered service. (Yamato Museum 071898)

FUBUKI-CLASS DESTROYER

Fubuki-class destroyers played an important role in the Guadalcanal campaign. *Fubuki*, the lead ship of the class, was a Group I Special Type unit as can be ascertained by the three early-type 5in gun turrets.

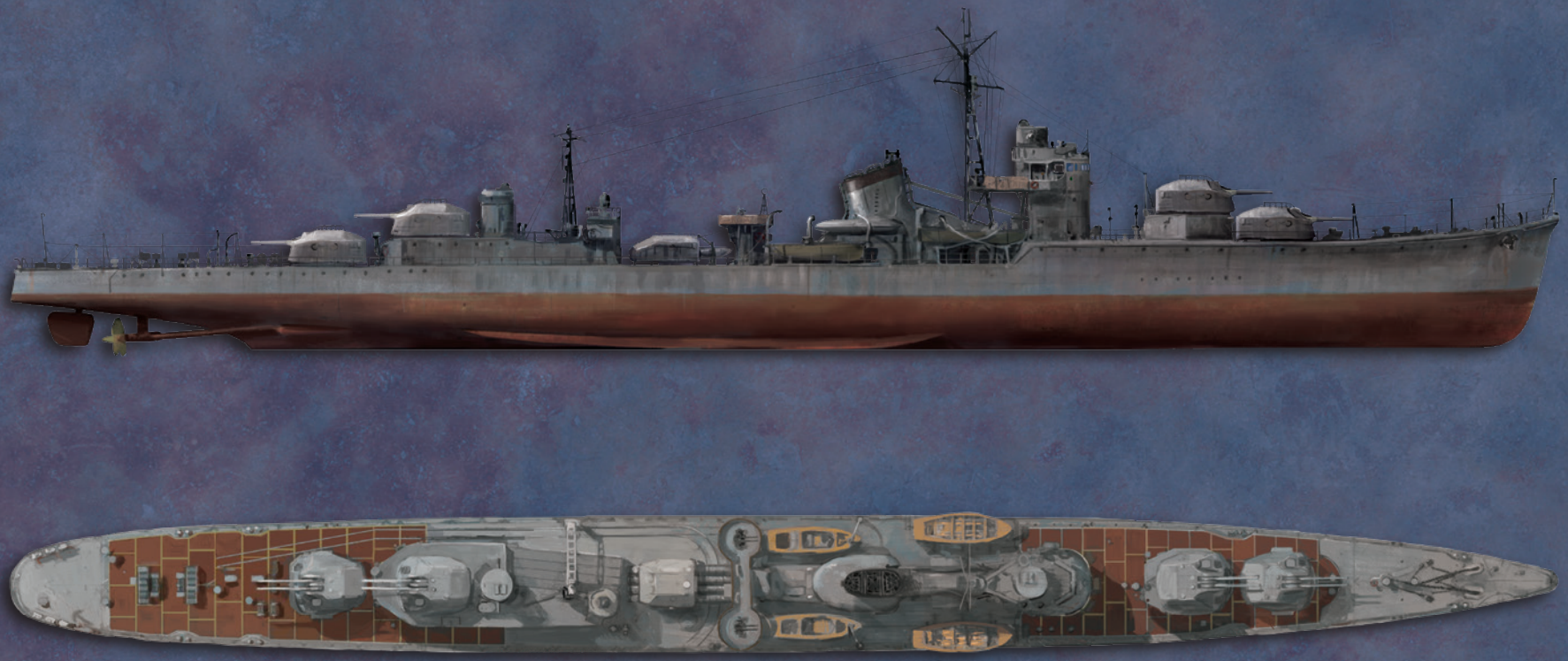


The most famous Special Type destroyer was *Amagiri*, shown here in November 1930 after completion. Aside from ramming and sinking *PT-109*, *Amagiri*'s wartime record included extensive operations off Guadalcanal and in the Central Solomons before it was sunk by a mine south of Balikpapan in the Dutch East Indies on April 23, 1944. (Yamato Museum 071961)

Designing destroyers armed with a mix of heavy torpedo and gun batteries and capable of high speeds was challenging for the Japanese. Naval treaties signed before World War II further increased this challenge. The Washington Naval Treaty of 1922 imposed tonnage displacement limitations on battleships, but it did not impose design limitations on destroyers, so the IJN introduced "Special Type" destroyers – the most heavily armed destroyers in the world when they entered service – that were large enough to fulfill all the IJN's design requirements. The London Naval Treaty of 1930 imposed limits on both the size and numbers of destroyers, however, which forced the IJN to downsize its next two classes of destroyers. As soon as the treaty limitations expired in 1937, the IJN resumed designing and building large destroyers.

Going into the Pacific War, the IJN possessed a large number of excellent destroyers maximized to perform as night-combat torpedo platforms; but this focus meant these ships were not as capable in other areas, including antisubmarine and antiaircraft warfare. Obviously, the IJN did not foresee the need to use its destroyers as high-speed transports before the Pacific War. Their use in this role was forced by wartime expediency. The ability of IJN destroyers to sustain high speeds made them ideally suited for supply missions in high-threat areas, but because they were never designed to carry cargo, their payload was small. Heavily armed destroyers could defend themselves against USN cruisers and destroyers attempting to interdict supply missions. Against the PT boats, however, the best form of self-defense was high speed and maneuverability.

The least successful IJN destroyers were those of the Hatsuharu class. This is *Hatsuharu* in July 1934 after it had undergone extensive reconstruction. Both the number of 5in guns and 24in torpedo tubes were reduced to correct stability issues. (Yamato Museum 071771)



AKIZUKI-CLASS DESTROYER

The first Akizuki-class destroyers were commissioned in time for the final stages of the Guadalcanal campaign. This is *Akizuki*; note the ship's balanced appearance with four 3.9in gun turrets, a large stack, and a single quadruple 24in torpedo mount.

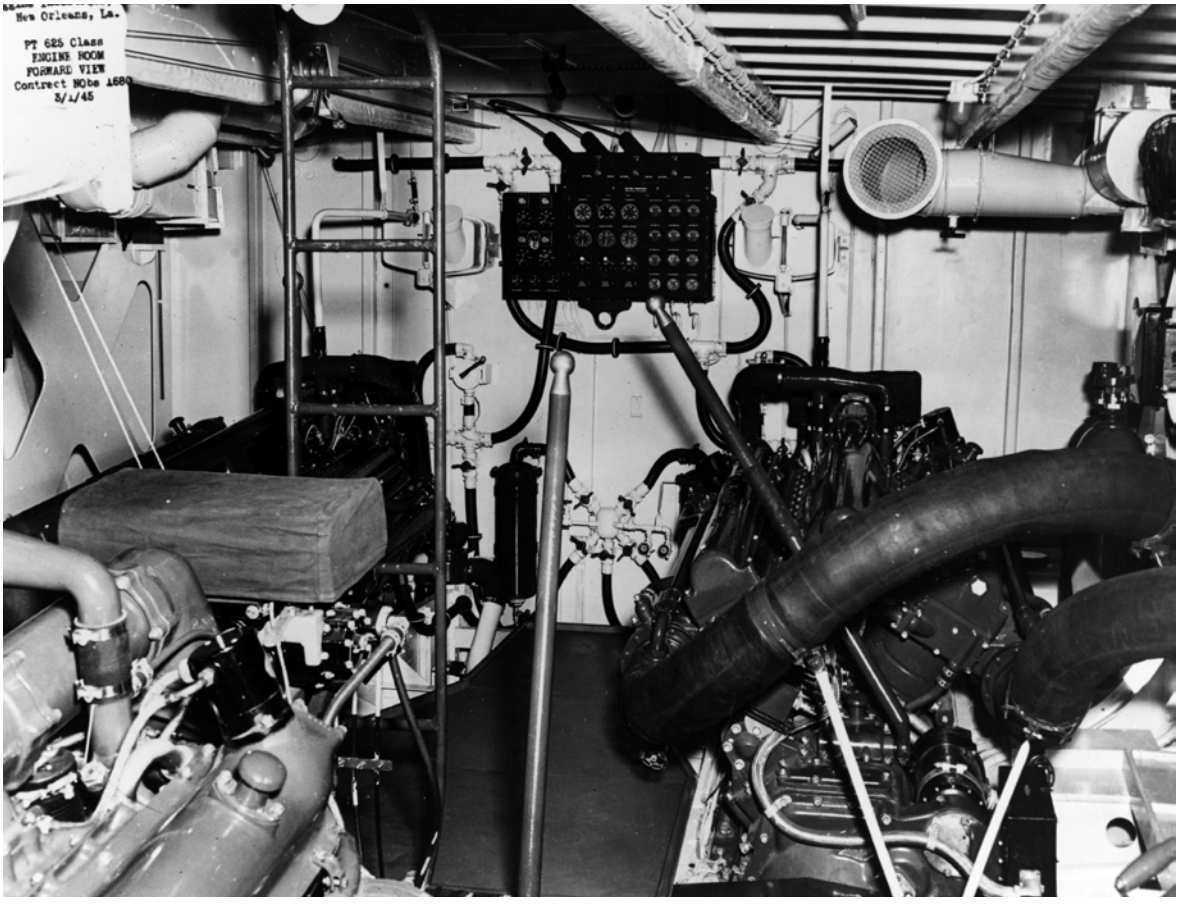
TECHNICAL SPECIFICATIONS

USN PT BOATS

PT boats were organized into units called Motor Torpedo Boat Squadrons (MTBRONs). The number of boats in a squadron was set at 12, but actual operational strength varied widely. The basic fighting entity was a division composed of four boats. This was not a rigid number, however; the driving factor as to how many boats were employed on a patrol was not the divisional structure but the number of boats actually operational.

Before the start of the war, six Elco 77ft PT boats assigned to MTBRON 3 were deployed to Cavite in the Philippines, from where the squadron achieved fame with several (unsubstantiated) claims against IJN ships and for its dramatic mission on the evening of March 11, 1942, to evacuate General Douglas MacArthur through the Japanese blockade. MTBRON 1, with 12 boats, began the war at Pearl Harbor, Hawaii. It was sent to defend Midway Atoll in mid-1942 but saw no action when the atoll was attacked in early June. MTBRON 2 was assigned to defend the Pacific approaches to the Panama Canal.

In July 1942, Lieutenant Commander Alan R. Montgomery assumed command of MTBRON 2 in Panama with its 14 PT boats. On July 27, MTBRON 2 divided. Montgomery took over the new MTBRON 3 and received eight boats. He handpicked 16 officers, a disbursing officer, and 103 enlisted men for his new unit. Based on events unfolding in the South Pacific, it was obvious where the MTBRON 3 was headed.

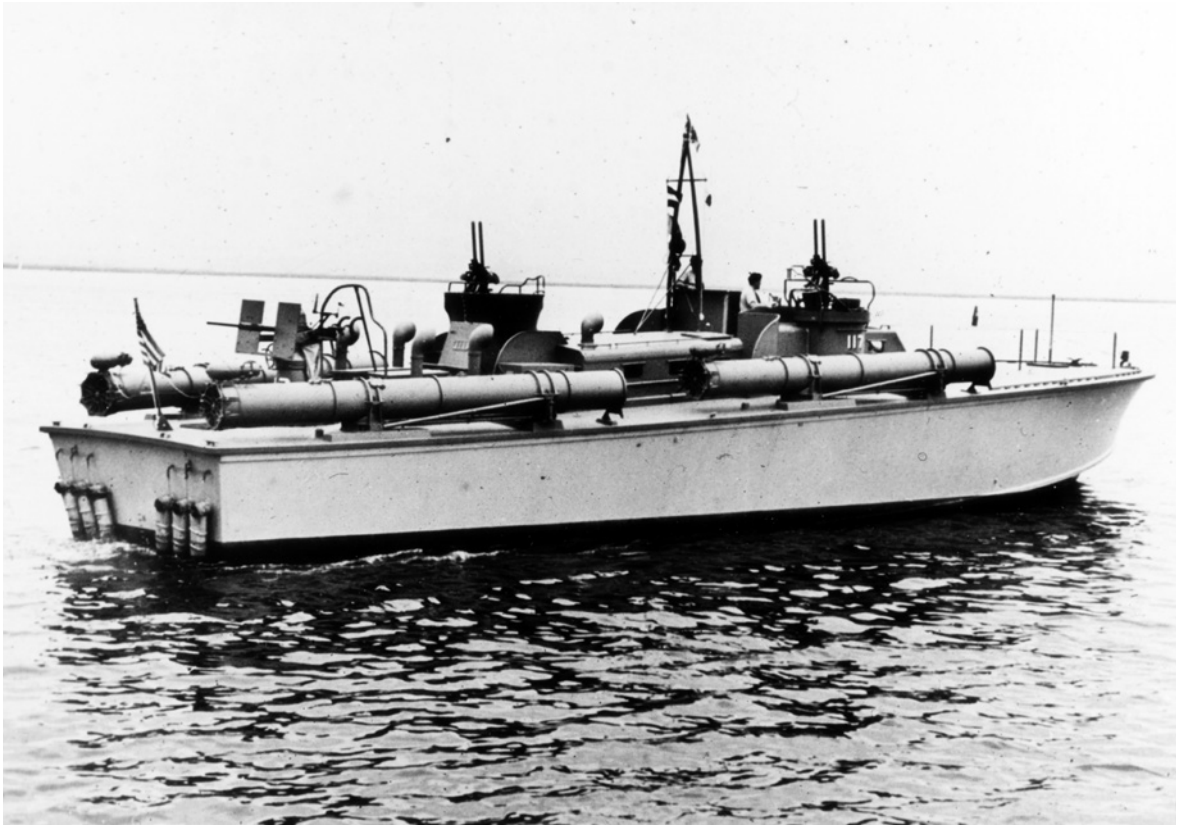


THE ELCO 77FT PT BOAT

The standard displacement of these boats was 33 tons. Construction was almost entirely wood with aluminum only used on the bridge structure. No armor protection was fitted as designed, but later boats received armor around the bridge. For a boat this size, it was packed with weapons. Most importantly, each boat could mount four 21in torpedo tubes, each with a torpedo that fired forward only. If only two torpedoes were embarked, space and weight became available for up to eight depth charges. Originally, each boat carried two twin .50-caliber mounts abaft the bridge in hydraulically powered aircraft-type turrets for antiaircraft protection. Two single mounts for .30-caliber Lewis machine guns were fitted forward of the bridge.

Elco 77ft PT Boat	
Displacement	Standard 33 tons; full load 46 tons
Dimensions	Length 77ft overall; beam 19ft 9in; draft 5ft 3in
Speed	41kn
Range	259NM at 41kn; 358NM at 35kn
Crew	12 (two officers, ten enlisted)

This view shows the engine room of Higgins 78ft PT boat *PT-625*, later transferred to the Soviet Union under Lend Lease. Almost all USN PT boats were powered by the same type of engine. Designed especially for PT boats, the Packard 4M-2500 marine engine ran on 100-octane aviation gasoline and developed up to 1,500hp. Three engines powered each boat with each engine driving its own propeller shaft. To be successful, a PT boat had to be fast; when the engines were performing up to specifications and the hull was clean, speeds in excess of 40kn could be easily achieved. (NHHC NH 71679)



Elco 80ft PT boat *PT-117*, photographed in August 1942 upon completion, carries the classic early-war PT boat weapons suite of four 21in torpedo tubes, four .50-caliber machine guns, and a single 20mm mount. Note the stops at the .50-caliber and 20mm mounts to prevent careless gunners damaging their own boat. *PT-117* was sunk by Japanese aircraft in Rendova Harbor, Central Solomons, on August 1, 1943. (NHHC NH 100910)

THE ELCO 80FT PT BOAT

Elco modified its 77ft PT boat design throughout the war. An 80ft version was introduced beginning with *PT-103*. A total of 358 of these boats were delivered from the company's Bayonne yard, making it the most produced PT boat variant. Though only 3ft longer than the previous version, they looked much larger because of their higher freeboard. They were also more rugged than the shorter boats.

For armament, the 80ft version mounted the standard four 21in torpedo tubes and two .50-caliber machine-gun turrets. Added to this weapons suite was a single mount 20mm Oerlikon cannon aft. Based on local requirements and the availability of weapons, other weapons augmented the gun battery. Several combinations were used, including a second 20mm mount, a 37mm gun, or a 40mm Bofors mount.

Elco 80ft PT Boat	
Displacement	Standard 51 tons; full load 80 tons
Dimensions	Length 80ft overall; beam 20ft 8in; draft 5ft 3in
Speed	43kn for early boats; 41kn thereafter
Range	550NM at maximum speed; 400NM at 30kn
Crew	11–17 (2–3 officers, 9–14 enlisted)

Higgins 78ft PT boats were built on an assembly line at Higgins Industries' City Park Plant, New Orleans, Louisiana, as shown here. The company produced a total of 146 of these boats for the USN, making it the second most numerous PT boat in service. Another 46 were delivered to the Soviet Union and seven to the Royal Navy. (NHHC NH 44482)

THE HIGGINS 78FT PT BOAT

The first Higgins 78ft PT boats were delivered in July 1942. In total, the New Orleans facility produced 221 of these boats of which *PT-71* through *PT-94* were 78ft, *PT-265* through *PT-313* and *PT-450* through *PT-485* were 78ft 6in, and the last batch, *PT-791* through *PT-802*, were 78ft 8in. They were all armed as per the Elco PT boats.

Higgins 78ft PT Boat	
Displacement	Standard 43 tons; full load 48 tons
Dimensions	Length 78ft overall; beam 20ft 1in; draft 6ft (*PT-71* through *PT-94*), all others 5ft 3in
Speed	41kn
Range	259NM at 41kn; 358NM at 35kn
Crew	9–14 (two officers, 7–12 enlisted)

PT BOAT WEAPONS

The sole reason the PT boat existed was to launch torpedoes against the enemy. For the first two years of the war, USN PT boats were crippled in this regard because they carried unreliable and often defective torpedoes. At the start of the war, the standard PT boat torpedo was the 21in Mk VIII, first introduced in 1912 for use aboard destroyers. The version allocated to PT boats had a range of 15,000yd, either a 316lb or 475lb warhead, and a top speed of 29kn. These were mediocre performance specifications, however, especially the speed. Worse than that, the Mk VIII was unreliable: the contact exploder often failed unless it struck the target at a near 90-degree angle; and the internal gyro tended to malfunction, which led to erratic runs. To keep the gyro level, the Mk VIII had to be launched from a torpedo tube. Another detracting factor was the Mk VIII's weight (up to 3,176lb) and length (21ft 4in), both of which made it cumbersome aboard the small PT boats.

Beginning in mid-1943, the 22.5in Mk XIII torpedo was introduced on PT boats. Originally an aircraft torpedo with a top speed of 33.5kn and a range of 5,500yd, it possessed a warhead consisting of 600lb of Torpex. At the start of the war, the Mk XIII also had reliability issues, but these were addressed by mid-1943. Because it was much smaller and lighter than the Mk VIII, it did not require a torpedo tube to facilitate its launch (it could simply be rolled into the water from a side rack), which meant there was an appreciable weight saving due to the Mk XIII's smaller size and lighter weight and the absence of torpedo tubes.

For their weight, the PT boats were heavily armed craft. In addition to the four torpedoes, a number of guns and cannons were embarked. The first boats carried only two pairs of .50-caliber machine guns mounted in two turrets. These were intended to provide some measure of antiaircraft protection but could also be used to engage surface targets. Augmenting the machine guns early in the war was one or two 20mm cannons, usually fitted on the aft portion of the boat and also capable of engaging both air and surface targets.

BELOW LEFT
An Elco PT boat fires a pair of 21in Mk VIII torpedoes off the Naval Torpedo Station at Newport, Rhode Island. Problems with this weapon greatly inhibited the boats' prospects for success during the Guadalcanal campaign. (NHHC NH 44485)

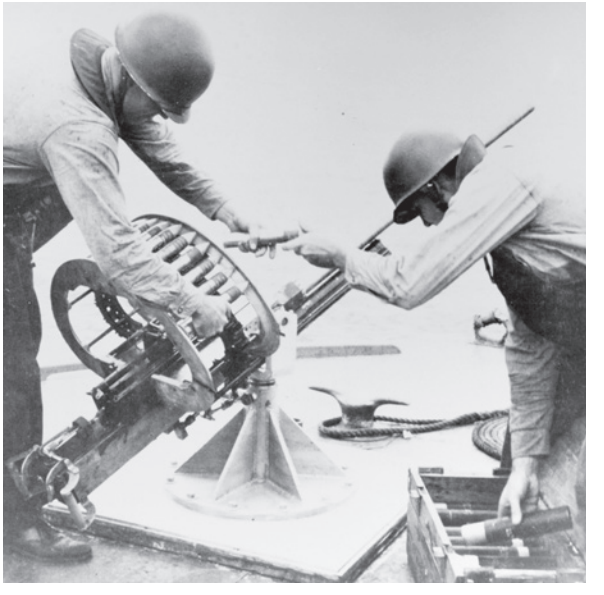
BELOW RIGHT
The 22.5in Mk XIII torpedo was a great improvement over the Mk VIII, but it was not available during the time PT boats were fighting against the Tokyo Express. Note the cradles used to stow the torpedo and roll it over the boat's side; as torpedo tubes were no longer required, boats could carry heavier weapons for anti-barge duties. (NHHC 80-G-58547)

When the PT boats turned their attention to Japanese barges, often armored and provided with guns larger than 20mm, it became apparent that the boats required larger-caliber weapons. In early 1943, a 37mm antitank gun was fitted on the bow to gain the upper hand against barges. Later that year, a 37mm automatic cannon from the USAAF became available. Beginning in August 1943, 40mm single Bofors mounts were experimented with. This proved to be an ideal anti-barge weapon with a high rate of fire, adequate range, and the capability to defeat any armor protection fitted on a barge.

Early in their production lives, Elco and Higgins PT boats mounted 20mm cannons on their afterdecks, as shown in this photograph of *PT-62* (an Elco 77ft boat) in 1942 or 1943. The 20mm cannon failed to make an impression on Japanese barges, however, so later in the war this position was used to mount a 40mm Bofors gun. (NHHC 80-G-K-13626)

PT boat guns

Weapon	.50-caliber machine gun	20mm cannon	37mm gun	40mm Bofors gun
Muzzle velocity	2,840ft/sec	2,740ft/sec	2,900ft/sec	2,890ft/sec
Shell weight	1.6oz	4.32oz	1.42lb	2lb
Rate of fire	450–500rd/min	450rd/min	15rd/min	60–90rd/min
Maximum range	7,400yd	4,800yd	8,580yd	11,000yd



ABOVE LEFT
All mass-production Elco and Higgins PT boats carried .50-caliber machine guns in the form of two twin mounts abaft the bridge. These were fitted for self-defense, principally against Japanese aircraft. (NHHC 80-G-K-14517)

ABOVE RIGHT
The desire to give PT boats greater firepower to counter Japanese barges led to field installations of 37mm automatic cannons, originally intended for USAAF Bell P-39 Airacobra fighter aircraft. This mount was locally produced, but by 1944 these cannons were factory installed. (NHHC NH 96501)

Up to eight racks for Mk 6 depth charges were fitted on the stern of PT boats. Each depth charge weighed 325lb, so in order not to inhibit the boat's speed, the usual load was only two. PT boats carried no sonar, so they were not effective submarine hunters and were not used for this mission. If an IJN submarine was spotted and then dove to escape, however, the depth charges could come in handy. Early in the war when PT boats were chased by IJN destroyers, the depth charges were used for a different purpose, when dropping them in the wakes of retreating boats often proved sufficient to curb the enthusiasm of a pursuing destroyer.

Also handy for avoiding attack was a smoke generator attached to the stern. The smoke generator held 32 gallons of titanium tetrachloride under pressure; when released, the chemical immediately formed a dense fog of white smoke.

PT BOAT RADAR

An important addition aboard PT boats was radar. The only set suitable for small boats was the SO series air/surface search radar, the 24in-diameter antenna of which was placed in a radome with the entire system weighing 420lb. Operating on microwave frequencies, the theoretical detection range was 15NM for a low-flying aircraft, 5NM for a small surface target, 10NM for a destroyer-size target, and 20NM for a large surface target. These were completely theoretical ranges, however, with actual detection ranges dependent on myriad factors. The prototype radar was first fitted on a PT boat at the Boston Navy Yard in November 1942, with production beginning in February 1943. A total of 525 SO radars were delivered by November 1944. Whatever its limitations, the addition of radar greatly enhanced the boats' capabilities; but this important addition did not happen until the Solomons campaign, which meant boats operating off Guadalcanal were entirely dependent on optical sensors.

USN PT BOAT WEAPONRY

PT weaponry (not shown to scale) included the 20mm Oerlikon cannon (top), the US Army's 37mm M3 antitank gun (middle), and the 22.5in Mk XIII torpedo (bottom).

IJN DESTROYERS

At the start of the war, IJN destroyers were grouped, almost always by class, into divisions with three or four ships forming a division. Three or four divisions formed a squadron commanded by a rear admiral with his flag on a light cruiser. By the start of the Guadalcanal campaign, this organization was largely intact. As the campaign dragged on, however, losses and maintenance requirements left the prewar structure in tatters. By the Solomons campaign, understrength squadrons were formed from several divisions to meet operational requirements by using whatever ships were operational.

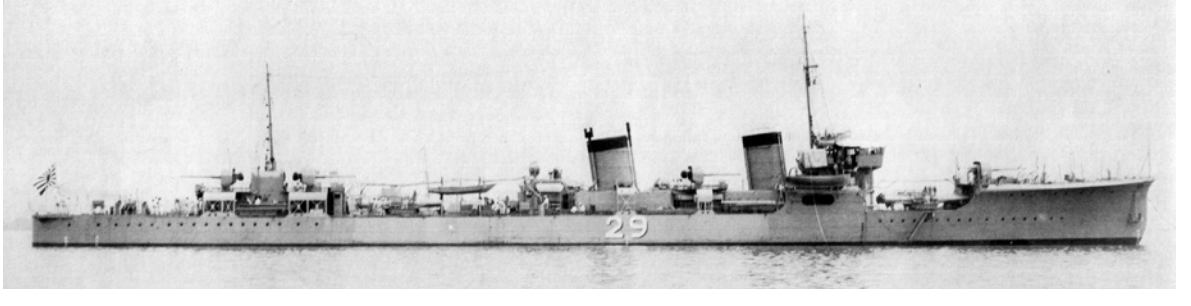
THE MUTSUKI CLASS

During 1925–27, 12 destroyers of the Mutsuki class were completed. This class introduced several new features and clearly demonstrated the Japanese predilection for a heavy torpedo armament. For the first time on an IJN destroyer, 24in torpedo tubes were fitted; six tubes were fitted in two triple launchers. Also for the first time, reloads were provided for each tube. The main battery consisted of four 4.7in single mounts.

Modifications after the Pacific War began focused on augmenting the destroyers' antiaircraft fit. Some ships immediately received a twin 13mm machine gun forward of the bridge and in positions abaft the aft stack. Those destroyers that survived into 1943 lost one or two of their 4.7in guns and four had their aft bank of triple torpedo tubes removed. This provided more deck space for cargo and reduced top-weight thus allowing the addition of 25mm antiaircraft mounts.

The Mutsuki class was very active in the Solomons during 1942–43. Eight of the destroyers participated in the Guadalcanal campaign, during which one (*Kikuzuki*) was sunk. Six were involved in operations during the Solomons campaign with three (*Mutsuki*, *Yayoi*, and *Mochizuki*) being sunk.

Mutsuki-class specifications (as completed)	
Displacement	Standard 1,315 tons; full load 1,772 tons
Dimensions	Length 336ft overall; beam 30ft; draft 10ft
Speed	37kn (design); 33.5kn in service
Range	4,000NM at 14kn
Crew	150



Mutsuki-class destroyer *Fumizuki* photographed in July 1926 after being completed. The Mutsuki class was the IJN's first modern destroyer with 24in torpedo tubes. A veteran of many Solomons transport missions, *Fumizuki* was sunk in an air attack on February 18, 1944, during the USN carrier raid on Truk Atoll. (Yamato Museum 0718677)

THE FUBUKI CLASS

The Washington Naval Treaty of 1922 had a direct impact on the Fubuki class. With the IJN locked into a position of inferiority on capital ships, it sought other ways to compensate. One of these was to build large and very heavily armed destroyers. During 1928–32, 20 Special Type destroyers were completed.

In terms of armament, Special Type destroyers were unsurpassed when they entered service. Each had three triple 24in torpedo mounts, and each tube was given a reload for an impressive total of 18 torpedoes. The main gun armament was increased to 5in weapons with six being carried in three twin mounts. Special Type destroyers had a critical weakness when commissioned, however, each being some 200 tons over the design weight, thus creating stability issues. This necessitated major modifications during 1935–38, part of which saw the number of torpedo reloads reduced from nine to three.

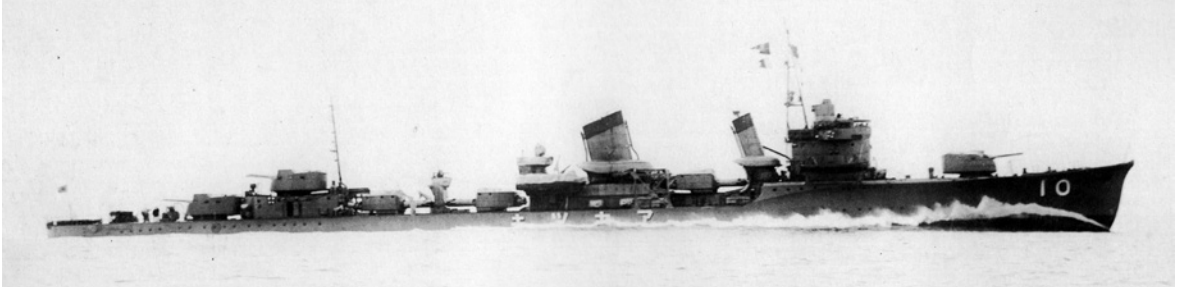
Initial wartime modifications focused on augmenting antiaircraft protection. The original 13mm mounts were exchanged for twin 25mm mounts and a twin 13mm mount was fitted in front of the bridge. These guns were also useful for countering attacks by PT boats. The first Special Type destroyer did not receive radar until November 1943.

Of the 19 Special Type destroyers available at the start of the war (*Miyuki* was sunk in a collision with the Akatsuki-class destroyer *Inazuma* on June 29, 1934), 14 took part in the Guadalcanal campaign. During these intensive operations, four (*Fubuki*, *Murakumo*, *Ayanami*, and *Asagiri*) were sunk. Four more participated in the Solomons campaign, with one (*Yūgiri*) being lost.

Fubuki-class specifications (as completed)	
Displacement	Standard 1,750 tons
Dimensions	Length 388ft 6in overall; beam 34ft; draft 10ft 6in
Speed	35kn
Range	5,000NM at 14kn
Crew	197

THE AKATSUKI CLASS

The last four Special Type destroyers, completed during 1932–33, were different enough to warrant a new class name. These were fitted with high-pressure boilers that



This is *Akatsuki* in January 1937 after it was reconstructed to address stability issues. *Akatsuki* was the lead ship in its four-ship class, also known to the Japanese as the Third Group of Special Type destroyers. The primary visual difference from the previous two groups was the smaller forward stack. (Yamato Museum 071774)

produced the same power as the four boilers on earlier IJN destroyers. All displayed the same stability problems as earlier Special Type destroyers and had to be rebuilt. Akatsuki-class destroyers were armed as per the other Special Type destroyers.

Three Akatsuki-class destroyers took part in the Guadalcanal campaign, during which one (*Akatsuki*) was sunk. One participated in the Solomons campaign.

Akatsuki-class specifications (as completed)	
Displacement	Standard 1,680 tons
Dimensions	Length 389ft overall; beam 34ft; draft 11ft
Speed	38kn
Range	5,000NM at 14kn
Crew	197

THE HATSUHARU CLASS

The London Naval Treaty, signed on April 22, 1930, capped the IJN's overall destroyer tonnage and the maximum tonnage per ship. This meant that the continued construction of Special Type destroyers was not possible. Accordingly, the Japanese endeavored to place the greatest possible firepower on a destroyer design that was publicly compliant with treaty restrictions. For the Hatsuharu class, laid down beginning in 1931, the intent was to fit the same armament carried by the Special Type destroyers on a design weighing some 260 tons less. Even with extensive weight-saving measures, however, this proved impossible. The first two destroyers completed had to return to the yards for extensive modifications and these were incorporated into the first four ships in the class.

After modification, the destroyers mounted a main battery of five 5in guns arranged in two twin mounts and one single mount. Two triple torpedo mounts were fitted, and all six 24in torpedo tubes were provided with reloads. After the war began, efforts were made to improve the destroyers' antiaircraft battery. Beginning in 1942, a twin 25mm mount was fitted in front of the bridge, and the original single 40mm guns were replaced by twin 25mm mounts.

Despite the fact that these ships were the least capable of the IJN's modern destroyers, they were committed to operations in the Guadalcanal and Solomons campaigns. Two served off Guadalcanal; one (*Yūgure*) was active during the Solomons campaign during which it was sunk.

Hatsuharu-class specifications (as completed)	
Displacement	Standard 1,490 tons; full load 1,802 tons
Dimensions	Length 359ft overall; beam 33ft; draft 10ft
Speed	36.5kn
Range	6,000NM at 15kn
Crew	228

THE SHIRATSUYU CLASS

The final six ships of the Hatsuharu class were canceled. Following a redesign that placed them over treaty tonnage limits, they emerged as the Shiratsuyu class. In all, ten destroyers were built to this design during 1936–37. As such, their appearance and armament closely resembled the Hatsuharu class, but one important enhancement was the torpedo battery. For the first time in an IJN destroyer, quad mounts were fitted. Eight reloads were provided for a total of 16 24in torpedoes. The main gun battery was identical to that of the Hatsuharu class.

Wartime modifications focused on augmentation of the destroyers' antiaircraft battery. A twin 25mm mount was added forward of the bridge and the original 40mm or 13mm guns amidships were replaced by triple 25mm mounts. Beginning in late 1942, the single aft 5in gun mount was removed and replaced by a triple 25mm mount.

All but one of the ten destroyers in the class participated in the Guadalcanal campaign, and all but one (*Yūdachi*) survived. Seven took part in the Solomons campaign, during which two (*Murasame* and *Kawakaze*) were sunk.

Shiratsuyu-class specifications (as completed)	
Displacement	Standard 1,685 tons; full load 1,980 tons
Dimensions	Length 353ft overall; beam 32ft 6in; draft 11ft 6in
Speed	34kn
Range	6,000NM at 15kn
Crew	180

The Shiratsuyu class was designed with the lessons from the unsuccessful Hatsuharu class in mind. This is *Harusame* in November 1943 after modernization. Of note, a 25mm mount has been placed in front of the bridge, a universal modification to IJN destroyers during the war. A No. 22 surface search radar is evident on the foremast. Not as evident is the replacement of the single 5in mount aft with a triple 25mm mount, indicating that antiaircraft protection was becoming more important. (Yamato Museum 071782)

THE ASASHIO CLASS

By the time the IJN began to design its next class of destroyers, it had already decided to ignore naval treaty limitations. By adding almost 30ft to the hull length and 300 tons of displacement, the IJN returned to building large destroyers comparable to the Special Type units. Laid down beginning in 1935, the Asashio class of ten destroyers was completed during 1937–39. There were some minor problems with the propulsion system, but overall the IJN was very happy with the design and used it as the basis for its next two destroyer classes.

The Asashio class returned to a main battery of six 5in guns in three twin mounts. The destroyers' primary offensive punch was provided by two quad torpedo mounts; each was given four reloads making a total of 16 24in embarked torpedoes. The antiaircraft suite was weak, however, with only two twin 25mm mounts fitted amidships. These were replaced by triple 25mm mounts in 1942–43, and an additional twin 25mm mount was placed in front of the bridge. None of the ten destroyers carried radar until late 1943.

At various points, seven of these destroyers saw action in the Guadalcanal campaign. During these operations, one (*Natsugumo*) was sunk. The only ship of the class to participate in the Solomons campaign (*Minegumo*) was lost in action.

Asashio-class specifications	
Displacement	Standard 1,961 tons
Dimensions	Length 388ft overall; beam 34ft; draft 12ft
Speed	35kn
Range	5,000NM at 18kn
Crew	200

THE KAGERŌ CLASS

Using the Asashio class as a design basis, the IJN laid down the Kagerō class beginning in 1937. During 1939–41, 19 were completed, these being virtually identical in appearance to the preceding Asashio class. The armament and its placement were also identical to the Asashio class. As on all IJN destroyers entering the war, the antiaircraft fit on the Kagerō class was increased in 1942–43. A twin 25mm mount was placed in front of the bridge to augment the two triple 25mm mounts amidships.

As the Kagerōs were front-line destroyers heavily engaged in the Solomons campaign, they were given priority for receiving radar. *Hamakaze* was the first IJN destroyer to have radar fitted in late 1942 after returning to Japan for a refit.

At the start of the war, the Kagerō class was the centerpiece of the IJN's destroyer force. Of the 19 Kagerōs, 17 took part in the Guadalcanal campaign; half of these were assigned to the IJN's carrier force, however, and did not see action off Guadalcanal until late in the campaign. Though many were damaged during this period, none were lost. Subsequently, 11 participated in the Solomons campaign, six of which (*Kagerō*, *Kuroshio*, *Oyashio*, *Hatsukaze*, *Arashi*, and *Hagikaze*) were sunk.

Kagerō-class specifications	
Displacement	Standard 2,033 tons
Dimensions	Length 388ft 6in overall; beam 35ft 6in; draft 12ft 4in
Speed	35kn
Range	5,000NM at 18kn
Crew	240

Following the success of the Asashio class, 19 destroyers were built to the very similar Kagerō-class design. Photographed in December 1939 during its sea trials, *Yukikaze* had a charmed wartime career, becoming the only ship in its class to survive the war. The Kagerō class was the backbone of the IJN's destroyer force at the start of the war and saw extensive action in the South Pacific. (Yamato Museum 065077)

THE YŪGUMO CLASS

This class of 19 destroyers, laid down beginning in 1940 and completed in 1941–44, represented the ultimate refinement of the Special Type destroyer concept dating back to 1928. As on the Kagerō class, the weapons suite of the Yūgumo class consisted of eight 24in torpedo tubes, each with a single reload, and six 5in guns in three twin mounts. The major difference in armament was the adoption of a new 5in twin mount with a higher elevation making it ostensibly more capable of antiaircraft work.

Seven of the 19 Yūgumo-class destroyers were not completed in time to participate in the Solomons campaign. Those units available were heavily engaged in operations in 1942–43, with seven taking part in both the Guadalcanal and Solomons campaigns. Two (*Makigumo* and *Takanami*) were sunk off Guadalcanal, and another four (*Yūgumo*, *Makinami*, *Ōnami*, and *Kiyonami*) were sunk during the Solomons campaign.

Yūgumo-class specifications	
Displacement	Standard 2,077 tons
Dimensions	Length 391ft overall; beam 35ft 6in; draft 12ft 4in
Speed	35kn
Range	5,000NM at 18kn
Crew	228

THE AKIZUKI CLASS

The largest IJN destroyers of the war were those of the Akizuki class. Conceived as antiaircraft screening units for IJN carriers, they carried four twin 3.9in mounts, two forward and two aft. A single quad torpedo mount for eight 24in torpedoes was also added, making these the IJN's most successful destroyer design. The first ship was laid down in 1940 and 12 were completed in 1941–44, several of which were too late to see combat.

Design of the Akizuki class centered around the 3.9in gun, a true dual-purpose gun. For engaging surface targets, a quadruple torpedo mount was added amidships for eight 24in torpedoes. As on previous IJN destroyer classes, the initial light antiaircraft weaponry was limited to two twin 25mm mounts. In 1943, these were replaced by triple 25mm mounts and another pair of triple mounts was placed abreast the stack. All except the first two Akizuki-class destroyers were completed with radar. Early-production examples carried the No. 21 air search radar.

Two Akizukis saw combat during the Guadalcanal campaign; one (*Teruzuki*) was sunk by PT boat attack. Two were also engaged during the Solomons campaign; one (*Niizuki*) was lost in action.

Akizuki-class specifications	
Displacement	Standard 2,701 tons
Dimensions	Length 440ft 4in overall; beam 38ft; draft 13ft 6in
Speed	33kn
Range	5,000NM at 18kn
Crew	290 (later rising to approximately 330)

IJN DESTROYER WEAPONS

The most important weapons aboard IJN destroyers were their torpedoes. However impressive the Type 93 24in torpedo was against Allied warships, though, it was virtually useless against USN PT boats because the latter craft presented a very small target and possessed a very shallow draft.

Development of the Type 93 24in torpedo gave IJN destroyers unsurpassed hitting power. The revolutionary Type 93 possessed an immense range of 43,700yd at 36kn, 35,000yd at 40kn, or 21,900yd at 48kn. Its warhead contained a deadly 1,078lb of explosives. As excellent as this weapon was, however, it was useless against PT boats. (Author's Collection)

IJN DESTROYER WEAPONRY

In 1942, almost all IJN destroyers carried the 25mm Type 96 gun (top), introduced in 1936 and the standard IJN antiaircraft gun of the war. The outstanding 3.9in/65 Type 98 gun (middle) was introduced aboard Akizuki-class destroyers. The standard torpedo launcher aboard all IJN destroyers beginning with the Shiratsuyu class was the quadruple 21in Type 92 torpedo mount (bottom). (Weapons are not shown to scale.)

Japanese destroyer guns				
Weapon	4.7in/45	5in/50	3.9in/65 Type 98	25mm Type 96
Muzzle velocity	2,707ft/sec	2,986–3,002ft/sec	3,378ft/sec	2,952ft/sec
Shell weight	45lb	50.7lb	28.6lb	8.8oz
Rate of fire	5rd/min	5–10rd/min	15rd/min	110rd/min actual
Maximum range	17,500yd	20,100yd	21,255yd	8,200yd

Much more useful than torpedoes for engaging PT boats were the guns fitted on IJN destroyers. Older destroyers, up through the Mutsuki class, carried single 4.7in/45 mounts. Beginning with the Special Type, IJN destroyers were fitted with 5in/50 guns in twin mounts (with the exception of the single mounts carried on the Hatsuharu and Shiratsuyu classes). The 5in/50 was not a true dual-purpose gun capable of engaging air targets because its training and elevation speeds were slow, a problem also evinced against fast surface targets at close range. It also exhibited a salvo-dispersion problem. Against surface targets, however, the 5in/50 had a decent rate of fire and good range.

The design of the last class of IJN fleet destroyers, the Akizuki class, was centered on incorporating the twin 3.9in/65 Type 98 mount. Combining reliability with a high rate and fire and excellent range, this was a true dual-purpose weapon and performed well in service.

Every IJN destroyer also carried light weapons for antiaircraft protection. Up through the Special Class, destroyers only carried 13mm machine guns. These were eventually replaced by the 25mm Type 96. It was originally installed as a twin mount, but later a triple mount was fitted on destroyers (a single mount was introduced after the period covered in this book). Hampered by slow training and elevation speeds, excessive muzzle blast, and the need to keep reloading 15-round magazines, the Type 96 was mediocre against aerial and surface targets.

IJN DESTROYER RADAR

It took until mid-1943 for the IJN to introduce radar aboard its destroyers. The set initially fitted was the No. 22 radar, which was placed on the foremast above the bridge. The No. 22 was a surface search radar but it possessed poor performance characteristics. Under ideal circumstances, it had a detection range against a destroyer-size target of 18,591yd, though there is no recorded instance of this being achieved. Against a PT boat-sized target, however, the detection range would have been much less, especially in areas near islands where the presence of land masses further decreased radar performance. Unlike USN radars, the No. 22 was not accurate enough to perform gunnery direction.

In addition to the No. 22 radar's poor performance, it was unreliable and the IJN operators were poorly trained. Until the introduction of radar in mid-1943, the first indication that an IJN destroyer captain would receive of the presence of a PT boat was from the report of a lookout. Using high-quality optics, IJN lookouts were renowned for their prowess at night.

THE COMBATANTS

PT BOAT CREWS

The USN was in the process of a massive expansion well before the Japanese attack on Pearl Harbor. From 1933 until the end of 1941, personnel numbers more than quadrupled, but finding enough officers to run the Two Ocean Navy was not easy. By the end of 1941, there were 38,601 officers; many more would be needed as wartime expansion kicked into gear. The traditional prewar source for commissioning was the United States Naval Academy located in Annapolis, Maryland. The small class sizes (just 456 in 1940) meant, however, that the majority of officers came from other sources. These included reserve officers recalled to active duty, the Reserve Officer Training Course with college graduates, and the Direct Commissioning Program. The latter were college graduates with no previous naval training who went through a three-month program before being commissioned. They were known in the USN with some derision as "Ninety Day Wonders." The first couple of PT squadrons were manned by officers who had graduated from Annapolis. After the massive expansion of the PT force, however, almost all officers came from the naval reserve.

For new officers entering the USN, PT boat duty seemed like an attractive option. Even a very junior officer could get command of his own boat. PT boat duty also offered the prospect of taking fast and powerfully armed boats into the teeth of the enemy. An example of the romantic appeal of PT boats was apparent when in one East Coast Direct Commissioning Course over 200 new ensigns applied for the 30 PT slots available.

USN detailers were told to look for men with previous sailing and small-boat experience when selecting men for PT boat duty. As most powerboats or yachts were

BELOW LEFT

A PT boat crewman poses with a belt of .50-caliber machine-gun ammunition on a boat operating out of the Motor Torpedo Boat Squadron Training Center at Melville, Rhode Island. In general, PT boat crewmen were handpicked. (NHHC 80-G-K-13624)

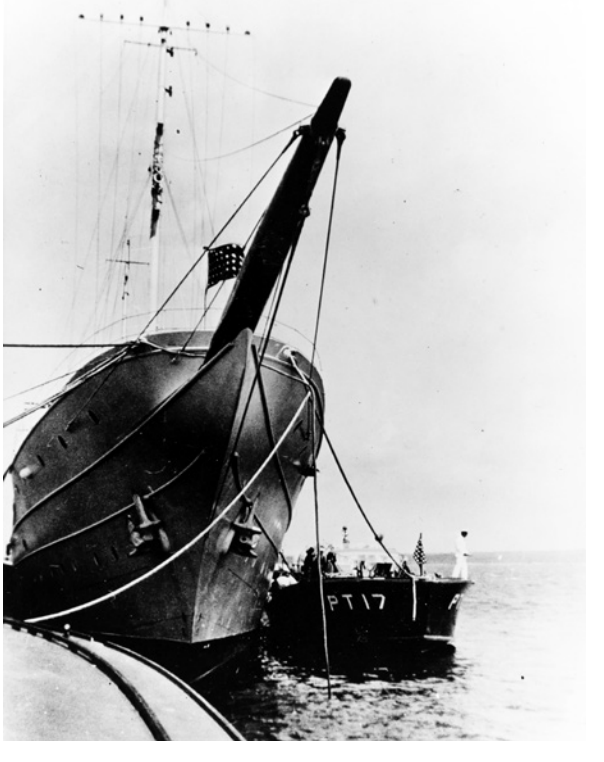
BELOW RIGHT

Niagara, the first PT boat tender, with *PT-17* alongside in 1941. The only PT boat tender lost during the war, *Niagara* was bombed and sunk on May 23, 1943, while attempting to move from Tulagi Island to New Guinea. The USN converted 19 ships during the war to act as PT boat tenders. They were essential to supporting boats operating in forward areas because the boats lacked the size to carry sufficient provisions and ammunition to allow them to operate for prolonged periods. (NHHC NH 82196-A)

owned by wealthy Americans of the period, this meant that many PT boat officers were drawn from affluent families in New England and the Mid-Atlantic states. More than a few were graduates from Ivy League schools. PT boat duty took only highly motivated and qualified volunteers. It attracted the cream of the officer corps, much like aviation. It was also preferred that enlisted crewmembers have small-boat experience, but this was not mandatory or even possible as the PT force grew.

Whether volunteers or draftees, enlisted personnel entered naval service at a boot camp in Great Lakes, Illinois, or San Diego, California. From there, they might be assigned to schools for a particular occupational rating based on their qualifications. The other route to gaining a particular rating was by "striking" for a rating as a junior seaman. PT boat crewmen were an average age of 21 years. Most had already achieved petty-officer rank.

Massive expansion of the PT force prompted the USN to establish a center dedicated to PT training. The first attempt to implement this consisted of a few PT boats and the PT boat tender *Niagara* going to Newport, Rhode Island (home of the Naval Torpedo Center), to establish a school on the tender in the spring of 1941. This was short-lived, however, as *Niagara* deployed to the Pacific in August 1941. A new squadron, MTBRON 4, was established as a dedicated training squadron and in February 1942 the Motor Torpedo Boat Squadrons Training Center was established at Melville, Rhode Island. Initial training at Melville lasted only two months; in 1943, this was increased to three months. A PT boat repair school and a course for squadron commanders were added subsequently. By March 1945, 1,797 officers and 11,668 enlisted men had passed through Melville.



The crew of *PT-157* pose on the boat's foredeck at Rendova Island in July 1943 in between operations during the New Georgia campaign. The lack of adherence to uniform regulations is evident. Being so small in numbers, crews usually established tight bonds. (NHHC USMC 57386)

The first PT boats had a crew of ten – two officers and eight enlisted men. When the boats received more weapons, this proved to be inadequate and crew size expanded to between 13 and 17. The two officers included the boat's captain in the rank of a lieutenant or a lieutenant junior grade (j.g.). Each boat had an executive officer, usually a lieutenant (j.g.) or an ensign. The rest of the crew was broken down into specific functions. The boatswain mate was responsible for the care and maintenance of the boat. The quartermaster was assigned for navigation. The cook and radioman had specific jobs, as did the two or three motor machinist mates to keep the boat's three engines in top working order. Two or three gunner's mates were also assigned to maintain the weapons, though in action some of the other crewmen would man the gun positions. Finally, a torpedo man was required to maintain the four torpedoes usually carried. In such a small crew, each man had to learn the jobs of the others in order to fill in when necessary.

Life aboard the small PT boats was arduous. Just riding across open water was a draining experience with the boat pitching and rolling. Sailors learned to compensate for the movement of the boat by standing with knees bent. At all times they kept one hand on the boat to avoid falling. Seasickness was an obvious issue, made worse by exhaustion, constant motion, and the smell of motor fuel.

Though small, PT boats were spacious below the main deck, but few comforts were available. The enlisted members of the crew lived in the forward part of the boat in bunks along each side of the hull. The two officers had small staterooms and a shared head. A day room was located between the officers' quarters and the engine room located in the stern. Beneath the day room was the storage tank for 1,000 gallons of highly flammable 100-octane aviation fuel.

LIFE ON TULAGI

Tulagi became the USN's only PT base during the Guadalcanal campaign. The small island was covered in jungle, and the climate made the days hot and stifling. Because it rained constantly, mud was pervasive. Living conditions in the jungle environment were taxing, and the camp set up for the men was crude. Dubbed "Snobhill" by its occupants, it consisted of a collection of bamboo shacks and tent shelters. The arrival of the 1,780-ton PT boat tender *Jamestown* in October made things a little more bearable as it offered access to better food and shower facilities. The tender also had officer berthing spaces. The combination of living in the jungle, relentless work in the heat of the day, topped off with long and tense patrols at night – the PT boats typically departed Tulagi at 1900hrs and returned to base at 0630hrs the next morning – wore the men down. By mid-November 1942, a month after the first PT boats arrived, the strain was undeniable.

Another problem was the shortage of fuel. The PT boats needed 100-octane aviation fuel, but there were no fuel storage facilities on Tulagi, so the boats had to be refueled from 55-gallon drums. It took the contents of 60 drums to fill one boat, a duty that was performed using hand pumps. Keeping the torpedoes ready for action was also a challenge. The weapons required constant maintenance, but there were few trained personnel to perform it, and the wet and humid conditions were not conducive to optimal performance.

Faced with the challenging conditions on Tulagi, the men adjusted as best they could. There was virtually no adherence to uniform regulations or to grooming standards. To cope with the heat, they resorted to a wardrobe that bore no resemblance to the rest of the USN. Cutoff shorts with no underwear or shirts were common. Hair was worn long and unkempt, and many men grew beards. The crews' diet was limited and lacked vitamins. Taking Atabrine tablets to counter malaria gave the men's skin an unhealthy-looking yellow hue.

Recreation was also minimal. Baseball was popular on the old cricket ground on the island, while other men fished. A limited selection of movies was available on *Jamestown*. There was almost no access to alcohol, except a homegrown concoction known as "Torpedo Juice." The aptly named drink was a mixture of 180-proof grain alcohol fuel from the torpedoes mixed with powdered fruit juice.

Late in the campaign, conditions for the crews improved. Enlisted housing was moved to adjacent Florida Island. In late January 1943, Captain Marcy M. Dupre, Jr. was appointed Commander, Motor Torpedo Boat Squadrons, South Pacific. With this came improved logistical support.

PT BOAT TACTICS

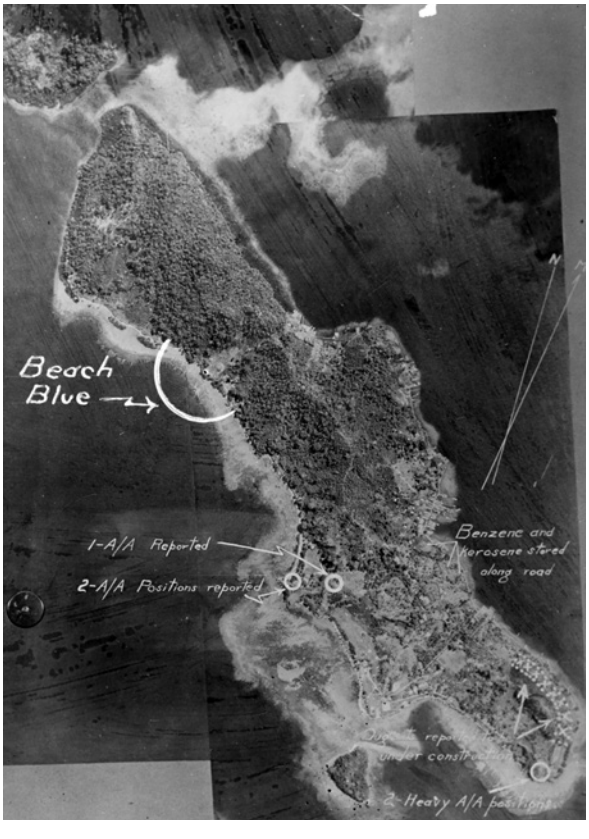
As the PT boat was envisioned as a weapons platform to attack enemy capital ships, early tactics and training reflected this mission. Accordingly, the squadrons practiced complex formation maneuvers and tactics, almost always in daylight. According to an officer who took part in the first PT action off Guadalcanal, this was worthless: "Now here we were, four boats heading out into the black of night, getting separated,

without the slightest idea of how we were going to find the enemy, let alone pull off an attack" (Johnson 1983: 82). The reality of war in the Solomons, as the crews quickly realized, was that a PT boat relied on stealth, not high speed. By moving at low speed, the boat could quietly approach its target. Operating at night, the key to success was not to create a large wake that could be spotted by a sharp-eyed lookout on an IJN destroyer. When the Japanese began using floatplanes to protect IJN destroyers from PT boat attack, the necessity of not creating a noticeable wake became even more important. Japanese pilots reported that they could spot the wake of a PT boat traveling at speed from as much as 4NM away.

Launching torpedoes from a PT boat at a moving target at night was a very inexact science that was totally dependent on the skill of the skipper conducting the attack. Though a primitive sight was fitted to the bridge to facilitate accuracy, given the time required to prepare for a torpedo launch the usual method was to aim the boat toward the target, set the gyro on the torpedo for a course based on a visual estimate, and hope for the best. Ideally, attacks were held until the target was approximately 500yd away. A beam attack was preferred because it provided the largest target. Under almost all situations, however, hitting a target was far from easy. If the target was a destroyer, it was also proceeding at high speed and maneuvering to give the least favorable target aspect possible. In addition, the destroyer was likely firing at the oncoming PT boat, forcing it to take evasive action, thus making a target solution even harder to develop.

BELOW LEFT
Tulagi in the southern Solomon Islands was the first PT base in the South Pacific. Located just across Iron Bottom Sound from Guadalcanal, it was an ideal location. Sesapi Cove, the location of the PT boat base on Tulagi, is in the northeastern part of the island directly east of the location marked Blue Beach.
(NHHC NH 97764)

BELOW RIGHT
In 1943 conditions for PT boat crews on Tulagi improved. Better housing was constructed on neighboring Florida Island and was dubbed "Calvertville" in honor of Commander Allen P. Calvert, Commander of MTB Flotilla 1.
(NHHC NH 44492)



JOHN F. KENNEDY

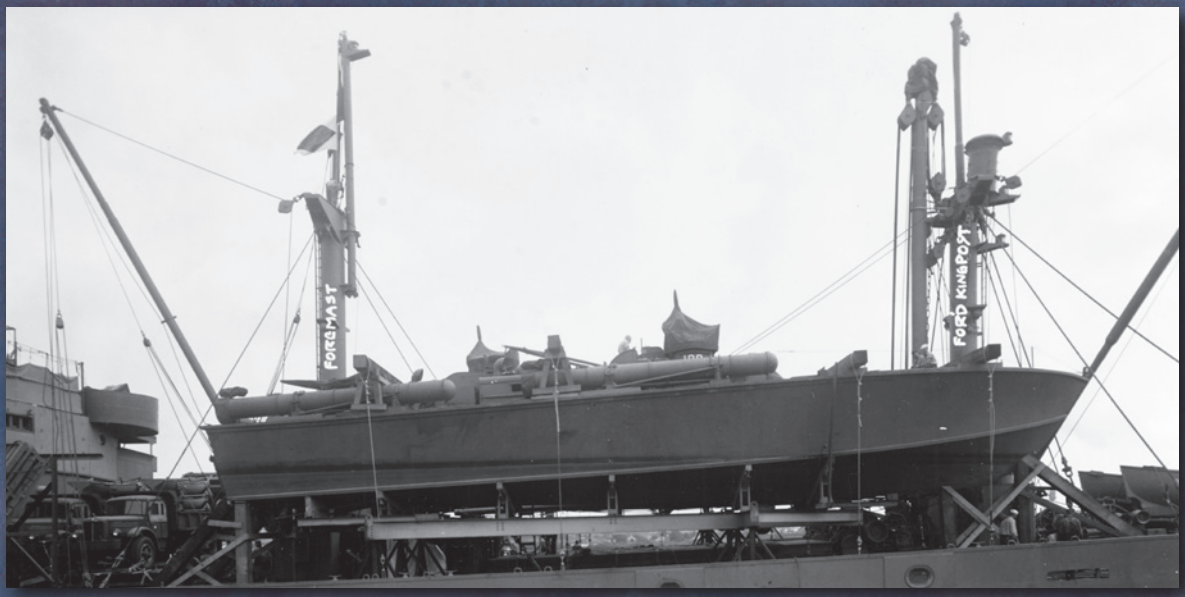
Without doubt, the most famous PT boat skipper was John F. Kennedy, later to become the 35th President of the United States. He was born into the influential and wealthy Kennedy clan on May 29, 1917. Even before the Japanese attack on Pearl Harbor, Kennedy was intent on joining the USN; but this was not a given because of his bad back, ulcers, and asthma. With the assistance of Captain Alan G. Kirk, Director of the Office of Naval Intelligence, who was the naval attaché in London when John's father, Joseph P. Kennedy, Sr., was the ambassador to the United Kingdom, Kennedy gained a reserve commission in October 1941 and was sent to the Office of Naval Intelligence.

From July through September 1942, Kennedy attended Naval Reserve Officers Training School after which he was posted to the Motor Torpedo Boat Squadron Training Center at Melville, Rhode Island. With his experience in small boats and the sailing team at Harvard University, he performed well and was asked to remain briefly after graduation as an instructor. He gained promotion to Lieutenant (j.g.) on October 10, 1942. With his training completed, he was set to get his own PT boat. He was ordered to MTBRON 4 (the PT training squadron) to assume command of *PT-101*, a Higgins 78ft boat. With the help of one of the senators from Massachusetts, who was a Kennedy family friend, Kennedy asked that his orders be changed to a combat zone.

Kennedy's desire for front-line duty was fulfilled on February 23, 1943, when he was transferred to MTBRON 2 based at Tulagi Island. He arrived there on April 14 and on April 23 assumed command of *PT-109*. His PT boat was one of many deployed to the Russell Islands on May 30 in preparation for the invasion of New Georgia Island in the Central Solomons. On June 16, *PT-109* moved to its new base on Rendova Island. From this very austere facility, PT boats began to patrol the Ferguson Passage and Blackett Strait to disrupt Japanese barge traffic to New Georgia.

On the night of August 1/2, *PT-109* was one of 15 PT boats on patrol in Blackett Strait, south of Kolombangara Island. On board were Kennedy, two ensigns, and ten enlisted crewmen. The night was moonless and exceedingly dark. Kennedy kept his boat at low speed to make the smallest wake and least amount of noise possible. Once on station, the boats encountered four IJN destroyers on a supply mission: three acting as transports with a fourth serving as escort. The PT boats fired a total of 30 torpedoes, but none hit their targets.

After expending their torpedoes, most of the PT boats returned to base. *PT-109* was one of three boats (along with *PT-162* and *PT-169*) ordered to remain behind to cover



Elco 80ft PT boat *PT-109* was completed in July 1942. The next month, it was loaded on the Liberty ship *Joseph Stanton* for transportation to the Pacific. This photograph was taken at the Norfolk Navy Yard, Virginia, on August 20, 1942. (NHHC 19-N-33165)

Blackett Strait. By now, there was fog present making the cloudy and moonless night even murkier. At about 0230hrs, a shape took form some 300yd off *PT-109*'s starboard bow. In the darkness, it was first believed to be another PT boat. After it was identified as an IJN destroyer, Kennedy attempted to turn *PT-109* to starboard to bring his torpedoes to bear. Before this maneuver could be executed, however, the Fubuki-class destroyer *Amagiri* rammed *PT-109* just forward of the forward starboard torpedo tube. The boat broke in two, with the bow section remaining afloat.

The most famous PT boat skipper of the Pacific War was Lieutenant (j.g.) John F. Kennedy. Coming from a privileged background, he ardently sought PT boat duty. (JFK Library)

Kennedy was not to blame for the collision. It was standard procedure to operate at night with the engines at low speed to avoid making a wake. His biggest concern was air attack from Japanese floatplanes. From the time *PT-109*'s crew spotted the oncoming *Amagiri*, only about ten seconds were available to get the engines up to speed and evade the destroyer. *Amagiri* was steaming without running lights, and the skipper, Lieutenant Commander Kohei Hanami, later admitted that he deliberately steered to hit the PT boat.

Amagiri continued on at full speed and its wake extinguished the flames on the floating bow section of *PT-109*. On this section were Kennedy and four other men; six others were in the water, and two had been killed in the collision. Despite his back, which had been injured when he was thrown about during the collision, Kennedy helped the two injured men in the water back to the floating bow section. For the next seven days, Kennedy spared no effort to save his crew. First, the crew swam to Plum Pudding Island 3NM away with Kennedy towing the most badly injured man the entire way. Kennedy then decided to swim the same route the PT boats took earlier in hopes that a friendly ship would find him. His attempt to link up with an American ship failed, as did that of another of the two officers. In the process, however, both men had spotted Olasana Island where there were coconuts, so the entire crew swam there, with Kennedy again towing the injured man. On the fourth day, Kennedy and the other officer swam to Naru Island and found several indigenous inhabitants. Kennedy carved a message on a coconut and handed it to one of the inhabitants and indicated that it should be delivered to the PT base at Rendova Island.

The following morning, the indigenous inhabitants returned with food and a letter from the local New Zealand coastwatcher for Kennedy to return with them. A rescue operation for the crew was planned, and on August 8 two PT boats arrived to rescue the survivors. Kennedy's exploits gained him citations and his exploits in the South Pacific became part of the Kennedy legend. Elected president on November 8, 1960, he had the opportunity to meet his rescuers. He became friends with Hanami, but the two never met. In 1960, when Kennedy was running for president, he met one of the other officers from *Amagiri* who gave him a card signed by other officers from the destroyer. In May 2002, a National Geographic Society expedition located the bow section of *PT-109* at a depth of approximately 1,200ft.

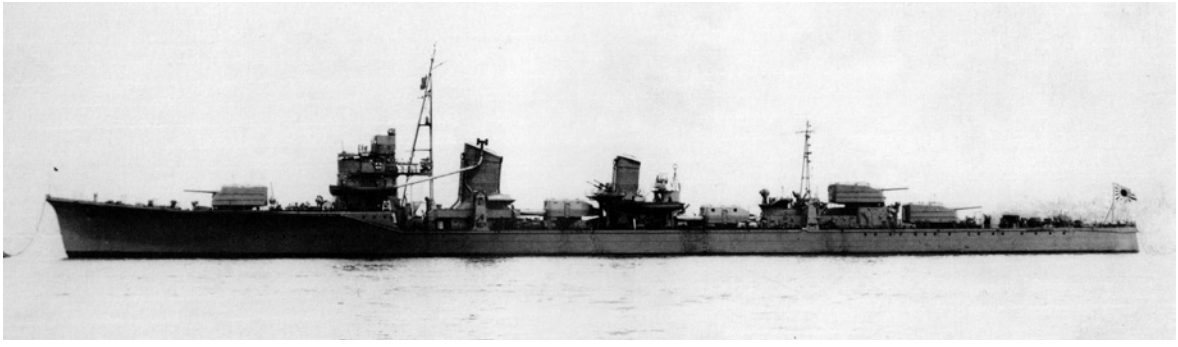
After launching a torpedo, the PT boat would likely have been detected and was probably under heavy fire. At this point, its high speed became an asset. Using speed, laying smoke, and executing radical maneuvers provided the boat with its best protection.

IJN DESTROYER CREWS

If the USN PT boat crews saw themselves as daring swashbucklers ready to tackle much larger and more powerful opponents, then their counterparts were the crews of IJN destroyers. During the Russo-Japanese War, Japanese torpedo-boat crews earned a reputation for daring in a number of attacks on the Russian battle fleet. Individual attacks of this nature appealed to the Japanese military ethos and offered the opportunity for a courageous warrior to inflict significant blows against the enemy through cunning and bravery. This remained the spirit of the IJN destroyer crews going into the Pacific War.

The basis for the importance of the destroyer in the IJN was the system of naval treaties signed between the World Wars that locked the IJN into a position of numerical inferiority compared to the USN. In the absence of these restrictive treaties, the IJN still understood that it would never be able to match the USN in a numerical sense. Thus it was necessary to equalize the USN's fighting power through other measures, one of which was to make every ship in the IJN more powerful than its USN counterpart. This explains the IJN's emphasis on building large and powerfully armed destroyers. It also drove the IJN to develop a weapon for these ships – the Type 93 torpedo – far superior in its capabilities to any other torpedo of the period and one capable of delivering decisive results. Superior ships and weapons were paired with intensive and realistic training aimed at creating crews with fighting capabilities better than those of their American counterparts. These two pillars gave the Japanese confidence they could overcome their more numerous American opponents.

Creation of finely honed destroyer crews was achieved with an intentionally rigorous and relentless training program. Intense training was necessary to master fundamental skills and make the conduct of tactics by individual ships and squadrons second nature. To simulate the fog and stress of actual combat, training was conducted under all weather and sea conditions. Foremost in the training schedule of IJN destroyer crews was rehearsal of night combat. In the 1920s, the Combined Fleet's commander ordered the fleet to engage in night combat exercises "more heroic than under actual battle conditions." This was not just rhetoric, as was confirmed in August 1927 during night torpedo exercises. During one such exercise on a dark night off northwestern Honshu, the price of realistic training was revealed. Destroyers moving into a favorable position for a torpedo attack collided with light cruisers with catastrophic results. The Momi-class destroyer *Warabi* was cut in two by the Sendai-class light cruiser *Jintsū* and sank with 104 casualties. The Momi-class destroyer *Ashi* was heavily damaged in a collision with the Sendai-class light cruiser *Naka* resulting in the loss of another 29 crewmen.



Naganami was a Yūgumo-class destroyer, pictured here in June 1942 after completion. The Yūgumo class was virtually identical to the preceding Kagerō class with the exception of the forward slope of the superstructure. *Naganami* was a South Pacific veteran and played a major role in the Japanese victory at the battle of Tassafaronga on November 30, 1942. On November 11, 1944, *Naganami* was sunk by air attack while escorting a troop convoy in the Philippines. (Yamato Museum 071578)

In addition to the intensity, the pace of training was relentless. In the prewar IJN, weekends did not exist and crews received shore leave of only two or three successive days per month. The IJN's training year began on December 1 and focused on single ship and squadron-level training through April. Beginning in May, training began with the entire Combined Fleet and reached a climax in October. Combat conditions were duplicated as closely as possible. Again, this was not rhetorical, as IJN officers often described training as tougher than actual combat.

The nature of training on an IJN destroyer was described by Hara Tameichi after the war in his book *Destroyer Captain* (Hara 2007). He was a destroyer skipper from the start of the war through the Solomons campaign and saw extensive action as the skipper of the Kagerō-class destroyer *Amatsukaze* and as commander of Destroyer Division 27 composed of Shiratsuyu-class destroyers. Hara trained his men rigorously, seeking to instill in them the idea that in combat situations, perfection in battle drills was essential. He recalled that his crew's initial bewilderment soon gave way to enthusiastic participation (Hara 2007: 163–64).

As a result of this training, IJN destroyer crews were well drilled in fundamental warfare skills and battle tactics. Since the primary mission of the IJN's destroyers was torpedo attack, the focus of training was on torpedo combat. A well-trained destroyer crew was able to gain bearing on a torpedo target and launch a full torpedo broadside within a couple of minutes after getting the word from an alert lookout. Reloading torpedoes was a key task that could be accomplished by a well-drilled crew within 15-20 minutes.

As excellent as this training was, it was focused on the night-battle phase of a major fleet action. Much of this translated into the series of night actions during the Guadalcanal campaign. None of it focused on countering USN PT boats, however, since the IJN did not foresee this type of threat. Even so, individual and division-level maneuvering and gunnery skills were essential to defeat small-boat attacks; but even an elite crew had problems directing accurate fire at small boats maneuvering at high speed at night.

The IJN's destroyer crews were composed of excellent personnel. A typical crew included 220–240 men of whom some two dozen were officers. IJN officers were highly intelligent, brave, and loyal. Before the war, almost all IJN naval officers entered the service through the Imperial Japanese Naval Academy located on the island of Etajima, near Hiroshima. Competition to enter the academy was fierce: in 1937, over 7,100 applicants contended for 240 places. Life at the academy was spartan and new

midshipmen were subjected to brutal beatings at the hands of upperclassmen, setting the tone for service in a navy in which beatings were commonplace. Fitness and toughness were foremost in the training regime at the academy. Overall, the quality of instruction was good, but the system valued conformity and reinforced group thinking. The result was an officer corps that in most cases displayed a lack of assertiveness, a lack of independent judgment, and an inability to see beyond narrow tactical concerns. In action, this could translate into a lack of aggression because of the inability to anticipate or react to unforeseen events.

In addition to a strong officer corps, the IJN possessed a high-quality enlisted force. In 1942, the IJN was composed of 34,769 officers and 394,599 enlisted personnel. At this point, the enlisted force was about one-third volunteers with the remainder being conscripts. This later shifted to a 50:50 mix of volunteers and conscripts as the IJN grew. Relations between the enlisted crewmembers and the officers were generally good. Lower ranking enlisted personnel were subjected to physical abuse by petty officers or even officers, but this was an accepted fact of service in the IJN. Life aboard an IJN destroyer was anything but comfortable, especially for the enlisted personnel. Habitability was a very low design priority, and the destroyers featured no creature comforts. In addition to the spartan conditions of service, the operational tempo for IJN destroyers during the Guadalcanal and Solomons campaigns was extremely high. As more destroyers were damaged or lost, the tempo for those still in service grew even more challenging.

"RAT TRANSPORTATION"

Aside from their demonstrated excellence as torpedo platforms, IJN destroyers also performed well as high-speed transports. Using destroyers in a transport role was not a mission embraced by their crews, but it turned out to be an essential element of Japanese operations during the Guadalcanal and Solomons campaigns.

During the Battle of the Eastern Solomons on August 24–25, 1942, the Japanese tried to get a small troop convoy to Guadalcanal. The battle was fought just days after the first American aircraft arrived on the island. As the USN and IJN carrier forces fought each other, the American aircraft based at Henderson Field, assisted by USAAF Boeing B-17 Flying Fortress heavy bombers operating from Nouméa on New Caledonia, savaged the convoy. This was the first confirmation for the Japanese that they had to seize or neutralize Henderson Field in order to run convoys to Guadalcanal. For a number of reasons, they were only able to run a convoy on one occasion, following bombardment of the airfield by IJN battleships in mid-October. Without being able to get cargo ships to the island, the Japanese had to look for other alternatives.

The only other viable method was to use IJN destroyers to move men and supplies to the island. During the campaign, the USN only controlled the waters around Guadalcanal during daylight hours when aircraft could fly from Henderson Field. Once night fell, control of the waters adjacent to the island switched to the IJN. Only rarely did major USN units contest control of these waters at night. Thus, IJN

destroyers were free to move to the island unimpeded by USN forces. To defeat American airpower, the Japanese learned that by using the high speed of the destroyers they could depart from their anchorage in the Shortland Islands (located off the southern tip of Bougainville Island) during the day, race down the waters between the Solomons toward Guadalcanal (this came to be called "The Slot" by the Americans), and get as close to Guadalcanal as possible while staying out of range of dive-bombers operating from Henderson Field (about 200NM) before making a sprint to Guadalcanal when night fell. Arriving off the island at about midnight, the IJN destroyers quickly unloaded their cargo by small boat, before departing and racing north to get out of air attack range by morning. This tactic was viable because American aircraft did not fly at night.

On August 28, the first supply run was conducted by four IJN destroyers. The result was disastrous because the Japanese failed to time their southern transit correctly. All four destroyers were attacked by 11 dive-bombers; though they were very difficult targets to hit, even for experienced dive-bomber pilots, on this occasion the destroyers were roughly handled. *Asagiri* was sunk, another two IJN destroyers were damaged, and the mission was aborted. Even experienced IJN destroyer squadron commander Rear Admiral Tanaka Raizō assessed that destroyer runs stood little hope of success, and some Imperial Japanese Army (IJA) commanders refused to allow their men to be moved by destroyers.

The following night, however, IJN destroyers evaded air attack and delivered 750 men to Guadalcanal. A smaller mission on August 30 was also successful. In September, the IJN increased the pace to move a brigade to the island for the next planned offensive. On September 1, four destroyers moved 465 men to the island; the following night, two destroyers were joined by two converted destroyers and a fast minelayer for another successful run.

ABOVE LEFT
This photograph shows newly arrived Japanese troops on Guadalcanal, almost certainly delivered by destroyers of the Tokyo Express. In the background is Savo Island. (Unknown/ Wikimedia/Public Domain)

ABOVE RIGHT
Japanese troops disembark from a destroyer. Of the just over 29,000 men the IJA dispatched to Guadalcanal the vast majority were delivered by the Tokyo Express. Without these regular destroyer runs, the Japanese could not have continued to fight on Guadalcanal. (Unknown/ Wikimedia/Public Domain)

TANAKA RAIZŌ

The most famous Japanese command figure associated with the Tokyo Express was Rear Admiral Tanaka Raizō. Even before the Guadalcanal campaign he was a battle-tested destroyer leader; this led him to play a leading role during the Guadalcanal campaign.

Born on April 27, 1892, Tanaka graduated from the Imperial Japanese Naval Academy at Etajima in 1913. Early in his career he became a torpedo specialist. At the start of the Pacific War, as a brand-new rear admiral, he was commander of the 2nd Destroyer Squadron and was embarked on his flagship, the Sendai-class light cruiser *Jintsū*. His squadron was very busy during the period of Japanese expansion in the first few months of the war, participating in the invasions of the Philippines and the Dutch East Indies.

In the abortive Japanese operation to occupy Midway Atoll in early June 1942, Tanaka commanded the Invasion Force, which was protected by *Jintsū* and ten destroyers. Immediately after receiving the news of US forces landing on Guadalcanal in early August, he was ordered to take his unit to Truk Atoll to take part in the initial Japanese effort to recapture the island. This operation prompted the battle of the Eastern Solomons on August 24–25. Tanaka's role in the operation was to bring a small reinforcement convoy to the island. Because the Japanese failed to appreciate the strength of the American garrison on the island and suppress Henderson Field, Tanaka's convoy was attacked by American aircraft. One transport ship (*Kinryu Maru*) and one destroyer (*Mutsuki*) were lost on August 25. *Jintsū* was damaged and Tanaka was wounded.

After the failure of the first Tokyo Express mission on August 28, Tanaka assessed that IJN destroyer runs had little hope of success in getting to Guadalcanal in the face of American airpower. Tanaka was wrong in this assessment, however, and it cast him out of favor with his superiors. On August 31, he was replaced as commander of the Reinforcement Unit, the IJN's designation for those destroyers assigned to Tokyo Express missions. This was only a temporary setback because Tanaka continued his involvement in the IJN's operations to move troops to the island.

Over the course of the next two months, Tanaka's destroyers made dozens of supply runs to the island. His successful efforts in this regard did much to prolong the Guadalcanal campaign, but when he was ordered to escort a major convoy to the island in November, the result was the same as the failed attempt in August. The failure of the November convoy resulted in the loss of 11 transports, and was the last Japanese effort to recapture the island. During this operation, Tanaka ruthlessly drove the transports under his charge to the island, even ordering the final four to beach themselves to get at least some of the men and supplies ashore.

Tanaka also enjoyed success against USN fleet units. With the Japanese garrison on Guadalcanal nearing starvation, he led one of the last Tokyo Express runs to the island with a force of eight destroyers on November 30. The USN tried to stop the supply mission with a force of five cruisers and four destroyers. The USN had the advantage of

Some IJA leaders still preferred to move troops to Guadalcanal by barge. This method was used during the Dutch East Indies campaign and was thought to be safer than destroyer runs. On the night of September 4/5, the first barge convoy arrived at Guadalcanal. Of the 1,000 men dispatched, however, only 150 arrived as scheduled. Eventually, all but 90 men were retrieved, but barge convoys fell out of future consideration. Destroyers were now recognized as the only reliable method to move men and supplies to the island.

The Japanese called these destroyer missions "Rat Transportation" because they were conducted at night. The Americans gave them the more respectable moniker of "Tokyo Express." Despite the fact that the Japanese had demonstrated the viability of this form of transportation, it remained a very inefficient method to move troops and supply. Each destroyer could embark 150 men or 30–40 tons of supplies, but heavy weapons and equipment could not be carried at all.

surprise, but Tanaka's well-drilled destroyers responded with a barrage of torpedoes that sank one USN heavy cruiser (*Northampton*) and damaged three more. As the IJN lost only one Yūgumo-class destroyer (*Takanami*), the battle of Tassafaronga was one of the largest USN defeats of the Pacific War. During another supply mission to Guadalcanal on December 12, 1942, Tanaka's force encountered USN PT boats. Tanaka's flagship, the large and brand-new Akizuki-class destroyer *Teruzuki*, was sunk by torpedo attack, making this the largest PT boat success of the Pacific War.

During the Guadalcanal campaign, Tanaka's reputation grew, principally in the eyes of his enemy; but after he expressed his opinion that Guadalcanal was not worth the high cost the IJN was having to pay, he again fell into disfavor. He was also criticized by some of his superiors and subordinates for displaying a lack of aggression and failure to provide leadership for this entire force. Using the excuse that his wounds made him unsuitable for sea duty, Tanaka was removed from his post as commander of the 2nd Destroyer Squadron and sent ashore on December 29, 1942. He held a series of shore appointments, none of which were important, until the end of the war.

Though not the only conductor of the Tokyo Express, Rear Admiral Tanaka Raizō was the best known. Initially dubious of the prospects for using IJN destroyers to make regular reinforcement and supply runs to Guadalcanal, he embraced the concept and made it work. (NHHC NH 63429)

Using destroyers, the Japanese were able to move an entire brigade to Guadalcanal in September for the second Japanese offensive to re-take the island. After this failed, the Japanese decided to move an entire division to the island for another try. For this, they added other high-speed ships to the Tokyo Express, some as large as 10,000-ton seaplane carriers, to move heavy equipment. During the prelude to their October offensive, the Japanese resorted to a nighttime battleship bombardment of Henderson Field in order to move a convoy to the island. The bombardment neutralized the airfield for a small period, allowing most of the convoy to arrive safely.

Even with an entire division, the Japanese October offensive to re-take Guadalcanal failed. For their next attempt, they resolved to move an even larger force to the island. The size of this force dictated the use of convoys, not destroyer runs. In November, the IJN tried another battleship bombardment of Henderson Field, followed by a large convoy. In what amounted to the turning point of the Guadalcanal campaign, both

attempts were defeated. Subsequently, the Americans began to increase their efforts to blockade the island from further Japanese reinforcement and supply runs. Part of this involved moving a squadron of PT boats to the island.

During the series of major naval engagements off Guadalcanal and in the course of almost nonstop Tokyo Express runs, IJN destroyer losses mounted. Accordingly, the IJN became more reluctant to risk its destroyers in the increasingly dangerous waters around the island. Eventually, the IJN informed the IJA that it would stop destroyer runs altogether – an action that would have condemned the island's garrison to annihilation.

The IJN's threat to stop the Tokyo Express was not carried out, however. Admiral Yamamoto Isoroku, commander of the Combined Fleet, felt duty-bound to support the IJA and decided to continue the destroyer runs. The inability to move adequate amounts of supplies by submarine or set up a supply chain using small barges forced a return to more destroyer supply runs. To lessen their vulnerability by reducing the time spent unloading supplies onto small boats, the Japanese devised a method whereby the destroyers would use heavy drums loaded with supplies. The drums, originally loaded with oil or gasoline, were cleaned out and then loaded with 330lb of rice and barley. Aboard each destroyer between 200 and 240 drums were bound together by rope into groups and loaded onto the weather decks. Upon reaching Guadalcanal, the drums were pushed overboard for the garrison to pull ashore. The Japanese calculated that only 20 destroyers were necessary each month to feed the 20,000-man garrison. When using this method, the destroyers were forced to offload their torpedo reloads to accommodate the additional weight of the filled drums.

The first time this method was to be used was during the night of November 30/December 1, after Tanaka's destroyers ran into a USN surface force. Though he won a great victory at the battle of Tassafaronga, no drums were unloaded. A second attempt took place on December 3, when ten destroyers unloaded 1,500 drums; but the garrison was able to recover only 310 of them, with American aircraft strafing and sinking the rest. After this debacle, the technique of delivery was refined. Now each destroyer carried 100 drums per line and was ordered to close as close to the shore of Guadalcanal as possible before unloading. The third drum attempt on December 7 met a major PT operation that forced the Japanese to abort their supply mission. The next effort, on the night of December 11/12, dumped 1,200 drums into the water off the island; only 220 were recovered by the garrison.

The marginal success of the drum delivery method forced further revisions. Each drum now had kapok wrapped around it to keep it afloat even if strafed. Each IJN destroyer embarked an IJA officer who was sent off on a small landing craft when the drums were released to help the garrison ashore locate and retrieve the rope line to which the drums were attached.

Also in December, the number of escorting destroyers on each run increased. Beginning in January 1943, these escorts were fitted with an extra pair of 13mm machine guns to counter PT boats. Floatplanes were assigned to protect the destroyers as they neared Guadalcanal and unloaded their drums. In the first run in January 1943, floatplane crews reported that they could spot PT boat wakes from several miles away. This became a permanent Japanese tactic to counter the boats. Later, floatplanes were equipped with small bombs to attack the boats.

THE STRATEGIC SITUATION

Up until the battle of Midway (June 4–6, 1942), the Japanese possessed the initiative in the Pacific. Following the battle, which blunted the IJN's offensive power, the USN seized the initiative and began to implement a plan to recapture Rabaul in the South Pacific. The first step of this campaign was a landing on the obscure island of Guadalcanal in the southern Solomon Islands. The island featured an almost completed airfield being built by the Japanese.

On August 7, 1942, Marines of the 1st Marine Division executed the first major American counteroffensive of the Pacific War. The landing on Guadalcanal was virtually unopposed and by the second day the Marines occupied the airfield. In response to the landing, an IJN task force hurried down from Rabaul and on August 9 during the battle of Savo Island inflicted a major defeat on Allied naval units covering the landing force. After the disaster at Savo Island, the USN relinquished control of the waters around Guadalcanal at night to the Japanese. The Japanese were unsure how large the Marine force on the island was, but they eventually settled on an assessment to reflect a small force. Accordingly, they decided to send a battalion of elite troops to sweep the Americans off Guadalcanal. Unable to run a convoy of merchant ships to the island without naval cover, the Japanese opted to use destroyers to move troops to the island. The first run by destroyers took place on August 16.

Using nightly destroyer runs, the IJN moved 917 men of the Ikki Detachment to Guadalcanal. This unit attacked the Marine perimeter on the night of August 20/21 and was virtually annihilated at the hands of dug-in Marines with superior firepower. Even more importantly, the day before on August 20, the nature of the campaign

Rear Admiral Richmond K. Turner confers with Major General Alexander A. Vandegrift, commander of the 1st Marine Division. The Marine Corps general requested USN PT boats to defend his beachhead. When they arrived in October, it prompted celebration among the Marines. (NHHC 80-CF-112-4-63)

changed when the first Marine aircraft arrived at the completed airfield, christened Henderson Field by the Marines after its capture.

The impact of the small Marine air contingent at Henderson Field was immediately obvious. By mid-August, the Combined Fleet moved the bulk of its strength to Truk Atoll in the Central Pacific and to Rabaul to mount the first major operation to destroy the USN and to eject the Marines from Guadalcanal. The resulting battle of the Eastern Solomons, fought on August 24–25, resulted in a tactical draw, but was another strategic defeat for the Japanese. The USN force covering the Marine beachhead was not defeated, and a small reinforcement convoy that the Japanese planned to move to the island was forced to turn back. Air attacks from Henderson Field were the main reason for the defeat of the reinforcement convoy.

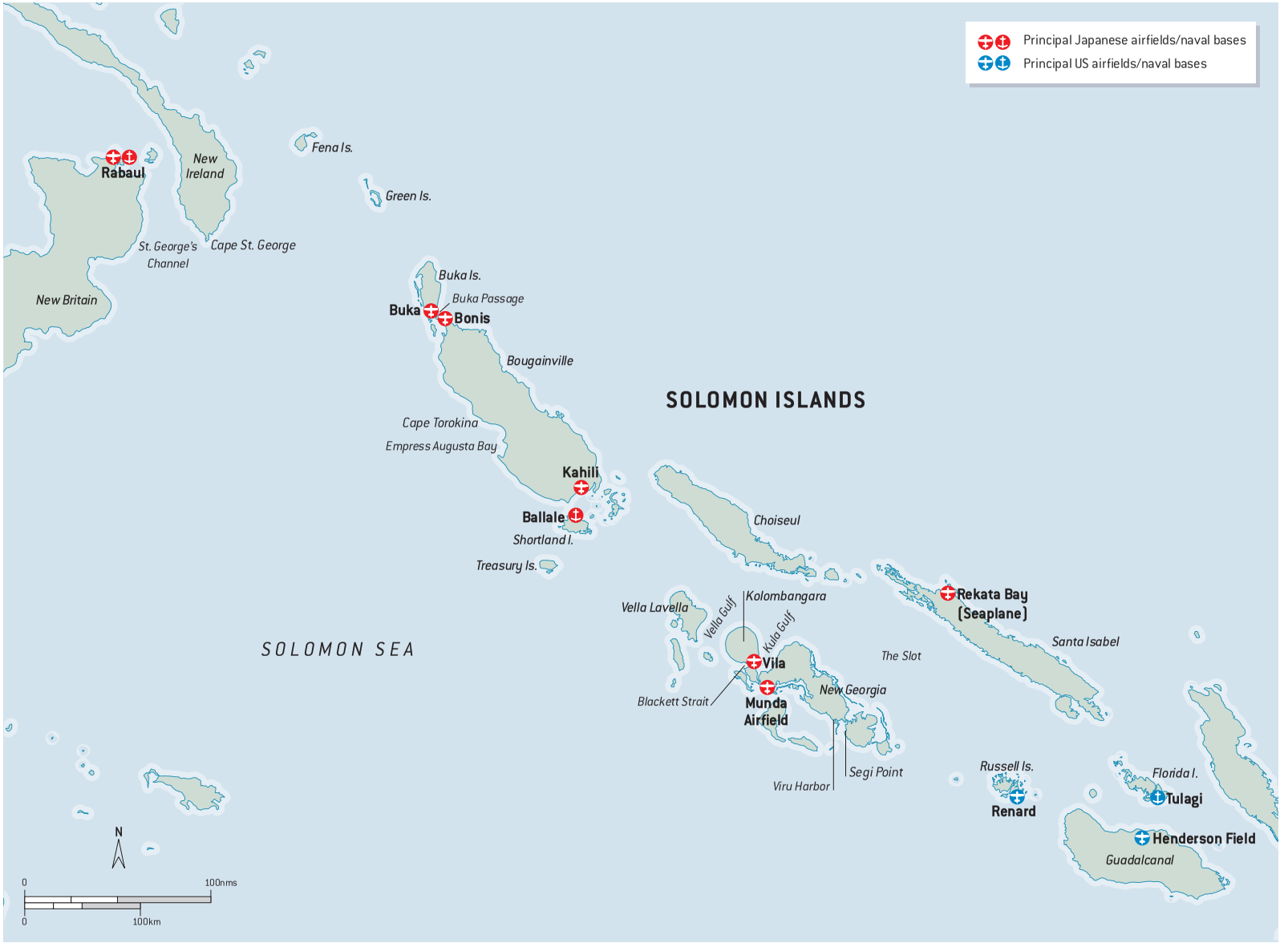
After the shock of the annihilation of the Ikki Detachment, the Japanese decided they needed a larger force to retake Guadalcanal. Plans called for an entire brigade to be moved to the island for the next attack. After the battle of the Eastern Solomons demonstrated that transport convoys were not an option, IJN destroyers were used again. Once perfected, the so-called Tokyo Express moved the brigade to Guadalcanal.

On the night of September 12/13, the second Japanese attack to take Henderson Field began. The initial assault misfired, but the attack was renewed the next night. In the battle of Bloody Ridge, the Japanese were again defeated. As a result, the Japanese decided to up the ante again and move an entire division to the island for the next attack. Despite a temporary stop in the Tokyo Express during the last week of September, the IJN promised to complete the movement of the 2nd Division by October 13–14 in order to support the scheduled October 20 attack. To meet the challenge, the Tokyo Express had to go into high gear. Large seaplane carriers joined the destroyers to move heavy equipment to the island. To neutralize the airfield, the IJN conducted a bombardment with two battleships on the night of October 13/14. This was successful and resulted in the temporary neutralization of Henderson Field, allowing a convoy of six fast transports to reach the island on October 15. The last major reinforcement run to the island before the planned offensive took place on October 17. By late October, the Japanese had some 20,000 troops on the island, most of whom had arrived there courtesy of the Tokyo Express.

The next Japanese attack to recapture Henderson Field finally began on the night of October 24/25. Again, the Japanese misjudged the effects of the terrain, and the attack misfired. Another attempt the next night fared no better, and the Japanese offensive failed with heavy casualties. In November, the Japanese planned to move an even larger force to Guadalcanal. After two major naval battles and the almost total destruction of an 11-ship convoy, it was clear that no further large-scale Japanese

OPPOSITE

This map shows the Central and Northern Solomons with both sides' principal airfields and naval bases.


Principal Japanese airfields/naval bases
Principal US airfields/naval bases
Rabaul
New Ireland
Fena Is.
Green Is.
St. George's Channel
Cape St. George
New Britain
Buka Is.
Buka Passage
Buka
Bonis
Bougainville
SOLOMON ISLANDS
Cape Torokina
Empress Augusta Bay
Kahili
Ballale
Shortland I.
Treasury Is.
Choiseul
Rekata Bay (Seaplane)
Santa Isabel
Vella Lavella
Vella Gulf
Kolombangara
Kula Gulf
The Slot
Vila
Munda Airfield
New Georgia
Blackett Strait
Segi Point
Viru Harbor
Russell Is.
Florida I.
Tulagi
Renard
Henderson Field
Guadalcanal
SOLOMON SEA
N
0
100nms
0
100km

offensive on the island were likely. The last Tokyo Express mission to the island of 1942 was conducted on December 11. By this point, the Japanese garrison was reduced to near-starvation with USN PT boats contributing to the misery.

On December 26, the IJN and the IJA agreed to withdraw from Guadalcanal. Ironically, the final runs of the Tokyo Express to the island were to extricate the surviving garrison. Over the span of three nights in February 1943, the Japanese skillfully evacuated some 10,000 men from the island. The campaign for Guadalcanal was a bitter six-month contest in which ground, naval, and air forces were locked in a complex combined-arms struggle. Henderson Field became the fulcrum for the entire battle with American forces focusing on holding the airfield and keeping it operational. Despite their numerical advantages, the Japanese were never able to mass their forces to seize the airfield or to knock it out of action for a prolonged period. The brave efforts of IJN destroyer crews to move troops to the island and keep them supplied ultimately proved insufficient.

By the end of the Guadalcanal campaign, the situation in the South Pacific was dramatically changed. The growing power of the USN gave it the ability to press the offensive into the Central Solomons. In a repeat of the Guadalcanal campaign, the campaign in the Central Solomons was fought over possession of Munda Airfield on New Georgia Island. After a series of preliminary operations, the Americans landed on New Georgia about 5 miles from the airfield on July 2, 1943. The attack quickly bogged down, however.

Not wanting to allow the Japanese to reinforce their garrison on New Georgia, the USN fought five major actions in the Central Solomons through October to stop IJN destroyers from resurrecting the Tokyo Express. Concurrently with the efforts of larger ships, the Americans used PT boats to interdict Japanese barges and destroyers moving supplies and men to key points in the Central Solomons.

In comparison, the IJN had suffered such severe losses at Guadalcanal that its ability to contest a renewed American advance into the Central and Northern Solomons had been severely degraded. Though they had no illusions they could stop the American drive into the Central Solomons, the Japanese had every intention of delaying the Americans for as long as possible while inflicting the maximum number of casualties. The IJN decided not to risk major fleet units during the campaign, leaving its destroyer force to lead the fight. In a series of night battles, IJN destroyers performed well, scoring two tactical victories against Allied cruiser–destroyer forces in July. Over the rest of the campaign, the IJN's night-fighting edge disappeared as the USN gained experience and used new tactics.

Despite the best efforts of Allied airpower, cruisers, and destroyers, and later USN PT boats, the IJN was able to move a large force to New Georgia, thereby delaying the American capture of Munda Airfield until August 5. Later, the Japanese succeeded in removing their New Georgia garrison and most of the men from nearby Kolombangara Island by barges and destroyers despite an American naval blockade. For the remainder of the Solomons campaign, barges were the primary method used by the Japanese for moving troops and supplies. By this point, USN PT boats were focused on stopping this traffic; but despite having their gun armament upgraded to deal with heavily armed and armored barges, the boats were never able to curtail Japanese barge movements seriously.

COMBAT

THE PT BOATS MAKE THEIR GUADALCANAL DEBUT

The Tokyo Express was already in operation when Major General Alexander A. Vandergrift, commander of the 1st Marine Division, requested motor torpedo boats on September 2 to perform night patrols off his beachhead on Guadalcanal. Lieutenant Commander Montgomery's MTBRON 3 was already making its way to the South Pacific. His first four PT boats (*PT-38*, *PT-46*, *PT-48*, and *PT-60*) were loaded aboard the fleet oilers *Lackawanna* and *Tappahannock* and departed Balboa in the Panama Canal Zone on August 29. The second echelon (*PT-37*, *PT-39*, *PT-45*, and *PT-61*) would follow. The PT boat tender *Jamestown* was ordered to make its way from the Motor Torpedo Boat Squadron Training Center at Melville, Rhode Island, to the South Pacific.

On September 19, the two fleet oilers carrying the first four PT boats arrived at Nouméa, New Caledonia. After unloading the boats, Montgomery met with Vice Admiral Robert L. Ghormley, commander of American forces in the South Pacific. Montgomery learned that his squadron would be sent to the Guadalcanal–Tulagi area to interdict the Tokyo Express.

After some debate, it was decided to establish a forward PT base in the Guadalcanal–Tulagi area. The site selected was secluded Sesapi Cove on the northeastern part of Tulagi. In order to save wear on the engines, Montgomery arranged to have the boats towed the 600NM to Tulagi. After heavy seas delayed the transit, Montgomery decided to make the last 300NM under the boats' own power. *PT-38*, *PT-46*, *PT-48*,

Lieutenant Commander Alan R. Montgomery led MTBRON 2 in the initial phases of its deployment to Tulagi. After getting the first division of his squadron to the island he was able to participate in only a few combat missions before being forced to depart due to illness. He received the Silver Star for gallantry for his action on October 13, 1942, and retired as a rear admiral. (NHHC NH 67701)

and *PT-60* arrived during the early-morning hours of October 12, right in the middle of the battle of Cape Esperance.

Once in place with his first four PT boats, Montgomery wanted to maintain the element of surprise by withholding their first operation for a worthwhile target. He did not have long to wait. On October 13, an IJN force was reported to be headed for the Guadalcanal beachhead. Initially, it was estimated to be a small force of only three ships, so Montgomery determined to withhold his boats. Actually, this was a major operation with two battleships, one light cruiser, and nine destroyers tasked to conduct a nighttime bombardment of Henderson Field.

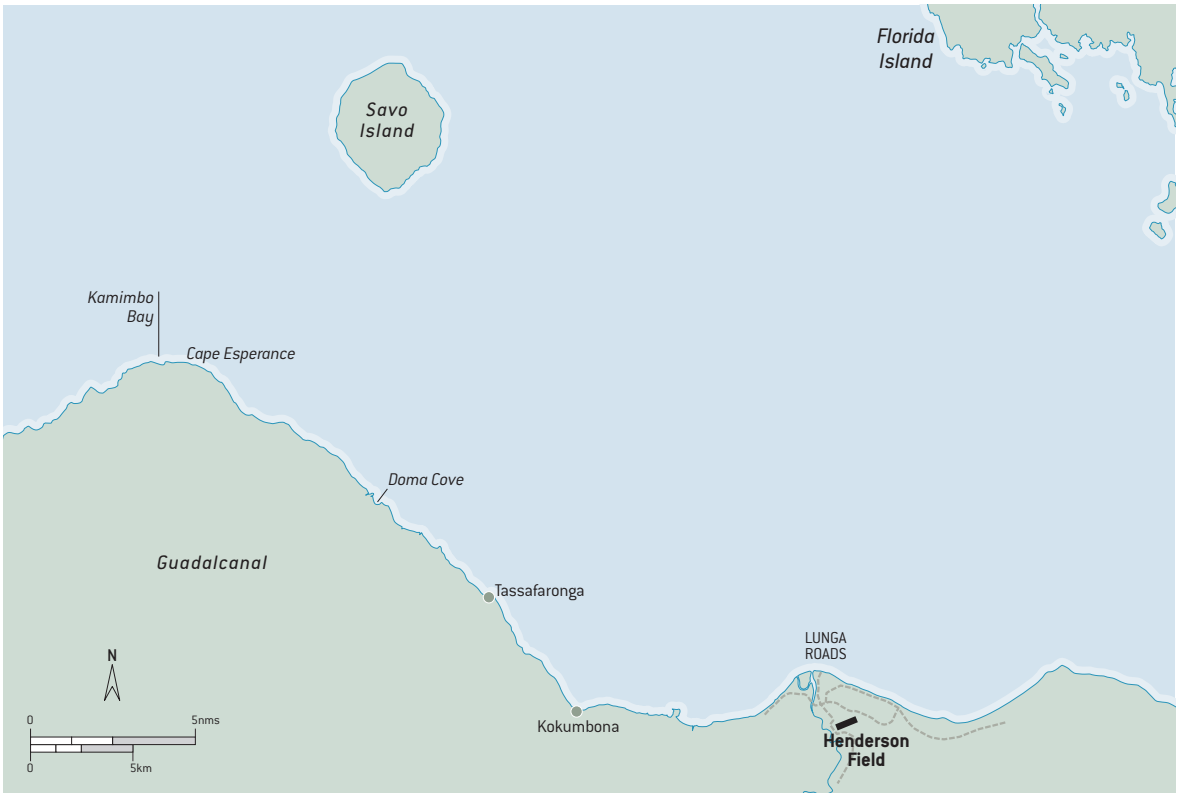
Obviously, this was a force worthy of Montgomery's attention. He ordered his four PT boats out of Tulagi. The group soon lost contact with each other, however, and encountered the IJN force's destroyer screen. Montgomery led the attack in *PT-60*. Making a stealthy approach, he penetrated the screen. After being detected and illuminated by a searchlight, *PT-60* launched two torpedoes. Montgomery claimed that he hit a cruiser. The retreating *PT-60* was taken under heavy fire, but dropping two depth charges prompted the pursuing destroyer to back off. *PT-38* also approached at 10kn to reduce its wake and got within 400yd of a target before launching a torpedo; a second torpedo was stuck in its tube in what was known as a "hot run." *PT-38* pressed to within 200yd of the target before launching its last two torpedoes. The result was the same, and the boat passed within 100yd of the stern of an IJN ship. The boat's crew reported that the fourth torpedo hit its target. *PT-46* and *PT-48* were unable to penetrate the screen, so didn't make an attack.

The clash ended indecisively – no IJN ships were hit, and none of the PT boats were hit. The boats were able to evade by using smoke screens, constant course changes, and the occasional dropping of depth charges to keep the IJN force from gaining. The two battleships proceeded to make a devastating bombardment of Henderson Field. The Japanese admiral in charge of the operation curtailed his bombardment by five minutes, though it is unlikely the activity of the PT boats played any role in that decision.

Before their next operation, the PT force at Tulagi received significant reinforcement. On October 22, *Jamestown* arrived with a supply of replacement torpedoes. On October 25, *PT-37*, *PT-39*, *PT-45*, and *PT-61* arrived at what was now called Motor Torpedo Base Ringbolt. The following day, Montgomery, afflicted with pneumonia and malaria, was relieved by Lieutenant Hugh M. Robinson.

On the night of October 29/30, six PT boats headed out on patrol. Three were positioned around Savo Island as scouts, with the other three retained in ambush positions. One of the scout boats, *PT-38*, detected two IJN destroyers and was quickly chased off. *PT-48* fired three torpedoes at another destroyer from 400yd. Neither side suffered damage.

During November 1–4, PT boats conducted nightly patrols without making contact. On the night of November 5/6, the Tokyo Express was back in action. A total of 15 IJN destroyers and a light cruiser were employed in an emergency run to move the bulk of an infantry regiment to the island. Four PT boats were on patrol that night. One of these, *PT-39*, encountered the Shiratsuyu-class destroyer *Murasame* and launched two torpedoes. One conducted a hot run and the other missed. Neither side inflicted damage on the other, and the Tokyo Express delivered its troops. The next night, three boats were



This map shows the northern coastline of Guadalcanal and the nearby islands.

on patrol. *PT-37* spotted a destroyer and launched four torpedoes. None hit since the attack was launched from too far away. *PT-48* also launched four torpedoes and claimed a hit. Once again, however, there was no damage to the destroyer.

On November 8, Robinson was ordered to make an all-out effort against a large run by the Tokyo Express. Only three boats (*PT-37*, *PT-39*, and *PT-61*) were able to answer the call. The light cruiser *Tenryū* and ten destroyers approached Tassafaronga and were met by the three PT boats starting at about 2245hrs. Before torpedoes could be launched, *PT-61*, with Robinson in command, was hit by a 5in shell on the bow. Miraculously, none of the crew was wounded and Robinson was able to escape behind a smoke screen. *PT-61* was repaired in 13 days. The other two boats each fired two torpedoes. One of these, probably from *PT-37*, struck the Mutsuki-class destroyer *Mochizuki*, but the weapon failed to explode.

The next encounter with the Tokyo Express occurred on the night of November 10/11. Robinson again led three PT boats out on patrol. Two of the boats reported launching torpedoes at a target, but their lack of success was reflected in Japanese records. *PT-37* was slightly damaged by a near miss. The next night, PT patrols made no contact. Five boats were active on the night of November 12/13 during the First Naval Battle of Guadalcanal. On this night, the largest and most vicious night surface battle of the entire Pacific War took place; wisely, the PT boats were instructed to stay clear since there was no way of determining whether a potential target was friend of foe. The evening after the battle, *PT-48* was assigned to patrol off the entrance of Tulagi harbor and instructed to take any ship that approached as

enemy. When the damaged heavy cruiser *Portland* emerged out of the gloom, *PT-48* launched a full salvo of four torpedoes. All missed, but the attack on a friendly ship reinforced the reputation of the motor torpedo boat force as a band of reckless and dangerous men.

The next night, two IJN cruisers returned to the waters off Guadalcanal to bombard Henderson Field. For 31 minutes starting at 0130hrs on November 14, the cruisers pummeled what they thought to be the airfield with 989 rounds of 8in shells. Four PT boats were active that night, and three reported firing torpedoes at the enemy. Despite claims that this prompted the cruisers to stop their bombardment early, this was not the case. No IJN ships were damaged, but the bombardment was inaccurate and failed to accomplish its mission.

Of the eight boats at Motor Torpedo Base Ringbolt, only three or four were operational on any given night. Both the boats and their crews were wearing out under the strain of constant patrols. During November 20–25, reinforcements finally reached Tulagi in the form of eight more boats from MTBRON 2. *PT-36*, *PT-40*, *PT-43*, *PT-44*, *PT-47*, and *PT-59* were Elco 77ft boats; they were joined by Elco 80ft boats *PT-109* and *PT-110*.

As the IJN had increasing difficulties getting destroyer runs through, they turned to another delivery method that was even more inefficient than using destroyers for delivering supplies. The new method entailed the use of IJN fleet submarines as transports. Submarines obviously had a greater potential for getting through the American blockade undetected, but the cargo capacity of each was a mere 20 tons. In mid-November the first submarines departed Shortland with supplies. The first encounter that the PT boats had with the newest participants in the Tokyo Express was on November 24 when fleet submarines *I-17* and *I-19* arrived at Kamimbo Bay and began to unload. The arrival of *PT-36* made the Japanese suspend their operations. Both submarines were able to return the following day and complete their missions.

By late November, the supply situation for the Japanese garrison on Guadalcanal was desperate. Despite the risk, however, IJN destroyers were ordered to resume supply runs. The drum delivery method was used to reduce the time the destroyers had to spend offshore to unload. The first attempt on November 30 was a failure, but the second attempt on December 3 was a partial success. Another drum delivery mission was scheduled for December 7, with a total of 12 destroyers, of which three were tasked as an escort. The mission got off to a bad start when 13 Marine Corps Douglas SBD Dauntless dive-bombers attacked the formation at about 1840hrs coming down The Slot. One destroyer took a near-miss that flooded the engine and boiler room, leaving the ship without power. Another destroyer suffered light damage. Both were sent back to the Shortlands with another two destroyers as escorts. This left eight destroyers to continue the mission.

Alerted that the destroyers were on their way, the PT force mounted a major effort to stop it with eight boats. *PT-40* and *PT-48* were positioned in the passage between Savo Island and Cape Esperance, while *PT-43* and *PT-109* covered the area between the village of Kokumbona and Cape Esperance. *PT-36*, *PT-37*, *PT-44*, and *PT-59* were hidden behind Savo Island as the main striking force. For the first time, a Curtiss SOC Seagull observation floatplane from one of the damaged USN cruisers sheltering at Tulagi was used in support to illuminate targets.

One of the few occasions on which the Americans committed major surface units to stop the Tokyo Express resulted in the battle of Tassafaronga on November 30, 1942. The USN suffered a major defeat with the heavy cruiser *Northampton* sunk and sister ships *New Orleans*, *Minneapolis*, and *Pensacola* damaged by IJN destroyer torpedoes. In this view, a PT boat brings survivors from *Northampton* into Tulagi Harbor. In the background is *New Orleans* with its bow blown off. (USN/Wikimedia/Public Domain)

The two PT boats between Savo and Cape Esperance made contact with the IJN destroyers at about 2320hrs. As they were trying to gain a favorable firing position in front of the destroyers, *PT-48* lost power in two of its three engines and was forced to withdraw. The boat headed toward Savo under cover of a smoke screen. Meanwhile, *PT-40* tried to divert the attention of the Japanese. The four boats held in reserve joined the fight at about 2335hrs. The Americans fired a total of 12 torpedoes, but none found a target. *PT-59* closed to within 100yd of the Kagerō-class destroyer *Kuroshio* and the two craft exchanged fire. The PT boat was hit ten times with 25mm shells but suffered no casualties. *Kuroshio* sustained ten casualties as a result of machine-gun fire. Two more boats fired all four of their torpedoes. The two boats stationed off northwest Guadalcanal, *PT-43* and *PT-109*, joined the action at about 0015hrs on December 8. The attacks by the boats failed to hit a single target but made an impression on the Japanese commander. In the face of a series of attacks, some at very short range, and with the SOC droning overhead, the Japanese commander decided to abort the mission.

In the aftermath of the December 7 debacle for the Tokyo Express, the Japanese stepped up submarine supply runs. American intelligence knew that the IJN was using submarines for supply missions but had failed to discern detailed information on the missions. PT boats were ordered to patrol likely unloading areas, but this was insufficient to stop the missions. During the first week of December, three submarine supply missions were successful. The details of the next mission were discerned by American intelligence, however, and the USN planned a reception. With precise knowledge of when and where the next submarine would arrive, *PT-44* and *PT-59* were given the mission to stop it.

On December 7, the 2,135-ton *I-3* departed Shortland and headed for Guadalcanal on its sixth supply run. On its previous supply mission, *I-3* had surfaced off Kamimbo on December 3. Before the submarine could unload its cargo, however, PT boats appeared and *I-3* was forced to abandon the mission and return to Shortland. On the next mission, *I-3* surfaced on the early morning of December 9, 3NM off Kamimbo. Once again, the submarine established contact with the garrison and launched its *daihatsu* barge to deliver cargo ashore. The intelligence provided to the waiting PT boats proved to be correct. At 0652hrs, lookouts on *PT-59* spotted the barge and the surfaced submarine. Minutes later, at 0703hrs, *PT-59* maneuvered into firing position without alerting the Japanese and fired two torpedoes from only 400yd. One hit the submarine in the stern, causing a large explosion, and the submarine sank quickly. Only four men from the crew of 94 survived.

OVERLEAF

In the most outstanding PT attack of the Guadalcanal campaign, the Akizuki-class destroyer *Teruzuki* was hit by a single torpedo during the early morning of December 12, 1942. This view shows the moment a 21in Mk VIII torpedo struck the destroyer.

Again, the operations of the PT boats had a greater impact than simply sinking a submarine. The loss of *I-3* made the Japanese temporarily suspend using submarines for supply missions.

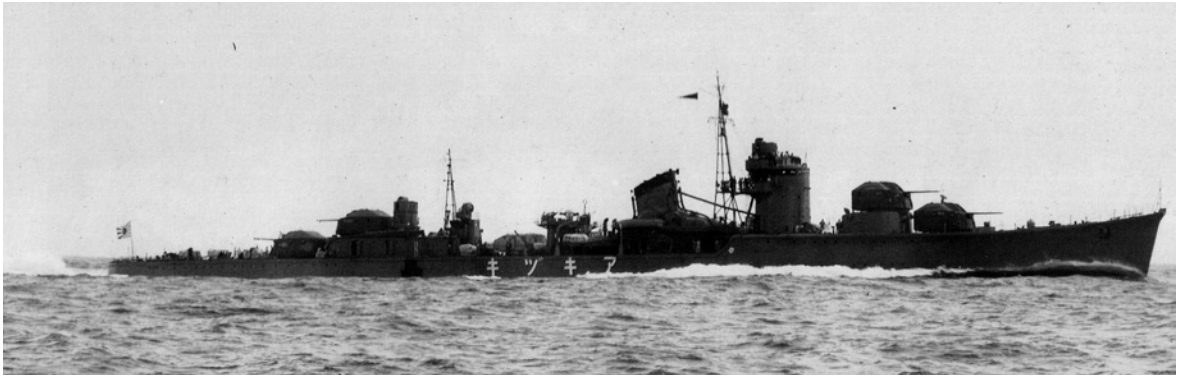
Despite the increasing threat to IJN destroyers moving supplies to Guadalcanal, Yamamoto gave his approval for one more supply run to the island. The mission, scheduled for December 11, was so important that it generated a personal message from Yamamoto. Tanaka was placed in charge of the run; 11 destroyers were allocated to the mission with five given the role of escort. Tanaka's flagship was the brand-new Akizuki-class destroyer *Teruzuki*. Once again, though, this operation failed to escape the attention of American intelligence. With knowledge of Tanaka's strength, timing, and destination, the Americans prepared to foil the mission. The first attempt was made by 14 dive-bombers operating at maximum range from Henderson Field at dusk on December 11. None of the bombers scored a hit, however, and one was lost to antiaircraft fire.

Off Guadalcanal, six PT boats prepared to meet the 11 destroyers. Three were positioned as scouts in Kamimbo Bay and the other three were hidden off the southeast side of Savo. The six destroyers carrying the supply drums approached Cape Esperance and dropped their 1,200 drums into the sea. By 0115hrs on December 12, the destroyers were in the process of withdrawing. The three boats off Savo (*PT-40*, *PT-45*, and *PT-59*) tracked the destroyers without being detected. All three launched torpedoes. One, probably from *PT-45*, hit *Teruzuki* on the port side, disabling one propeller shaft and the rudder. As *Teruzuki* went dead in the water, an oil-fed fire spread in the surrounding water. After three hours, the fires reached the depth-charge magazine in *Teruzuki*'s stern section. The resulting explosion sank the destroyer. Only nine men were killed, with the rest of the crew being rescued by other destroyers or reaching the shore on small boats. Tanaka was temporarily knocked unconscious but was rescued by a destroyer.

The three PT boats off Kamimbo were alerted to the presence of the IJN destroyers by the torpedoing of *Teruzuki*. *PT-44* and *PT-114* headed to the scene but were detected and engaged by the Shiratsuyu-class destroyers *Kawakaze* and *Suzukaze*. On this occasion, Japanese gunnery was accurate and scored a hit on *PT-44* that disabled the engines and set the boat afire. Within seconds, the skipper ordered the crew to leave the boat, followed by another hit that destroyed *PT-44*. Only two of the crew of 11 survived. This was the first PT boat destroyed during the Guadalcanal campaign, and the first combat deaths for the Tulagi-based boats. After the action, the Americans determined that *PT-44*'s high-speed approach gave *Kawakaze* and *Suzukaze* a perfect target.

This was the last Tokyo Express run to Guadalcanal in 1942 and a minor debacle for the IJN. Only 220 of the 1,200 drums dropped by the destroyers were retrieved by the garrison. In addition, a brand-new destroyer was lost. It was a clear victory for the PT boats. During December 15–29, conditions were not favorable for destroyer runs because of moonlight. Instead, the Tokyo Express shifted its focus to moving men and supplies to the village of Munda on New Georgia, Central Solomons.

As the Japanese pondered when to resume Tokyo Express runs, the PT force at Tulagi was upgraded. On December 15, Commander Allen Calvert, a Naval Academy graduate, established Motor Torpedo Boat Flotilla 1. On December 31, six more Elco



The largest class of IJN destroyers and the most handsome was the Akizuki class. This is the lead ship in May 1942 conducting full-power trials. (Yamato Museum 071780)

80ft PT boats. *PT-111* and *PT-112* joined MTBRON 2, while *PT-115*, *PT-118*, *PT-123*, and *PT-124* were allocated to the new MTBRON 6.

In January 1943, the IJN resumed regular Tokyo Express runs. As already noted, the results of the December runs using the drum delivery method were unsatisfactory, so refinements were made. The first mission was scheduled for January 2. Tanaka was replaced by Rear Admiral Koyanagi Tomiji; he was given ten destroyers split between five to carry the drums and five to escort. On their way down The Slot, the Japanese were subjected to two air attacks. The first mounted by USAAF B-17s was ineffective, but the second mounted before dusk damaged *Suzukaze*. The ship was forced to turn back under the escort of another destroyer. The remaining eight destroyers pressed ahead to complete their mission. That night, 11 PT boats were active but had no success. One of the reasons for this was the first use of floatplanes by the Japanese to provide close escort to the destroyers. Because they could spot PT boat wakes at a great distance, depending on the speed of the boats, they provided useful situational awareness for the destroyers. More encouraging to the Japanese was that 540 drums and 250 rubber bags of supplies were recovered by Guadalcanal's garrison; but this was only a five-day supply.

The next run was made on January 10, this time by eight destroyers divided equally between supply and escort ships. Ten PT boats were on patrol that night, four as scouts and six as a strike force organized into two groups. The two boats stationed between Doma Cove and Tassafaronga were the first to spot the approaching IJN destroyers at 0037hrs on January 11. *PT-43* closed in for an attack and launched two torpedoes against the Kagerō-class lead destroyer *Tokitsukaze*. Neither hit, and the launch created a bright flash from the powder charge that was used to launch the torpedoes allowing the Japanese to direct their fire. The boat was hit by 5in fire and abandoned. Two men were killed and a third died later of his wounds. The hulk of the boat was still afloat the next day, so was scuttled by friendly forces.

The second destroyer in column, the Kagerō-class *Hatsukaze*, was attacked by *PT-40* after the PT boat got within 500yd using a slow approach. The Americans fired four torpedoes and claimed a hit. Usually, claims of a successful strike were unsupported by fact. From the low vantage point of a PT boat and with explosions from Japanese gunfire, it was easy to claim a torpedo hit when none occurred. On this occasion, however, the claim was correct. One torpedo hit *Hatsukaze* on the port side and caused heavy damage; it also killed eight and wounded 23 crewmen. Remarkably, the

OVERLEAF

The first PT boat lost during the campaign was *PT-44*, sunk by destroyer gunfire on December 12. This Elco 77ft PT boat was the first of six boats lost off Guadalcanal, all but one at the hands of IJN destroyers.

Elco 80ft PT boats *PT-111* and *PT-112* are pictured here on the oiler *Tallulah* at the Norfolk Navy Yard, Virginia, on October 10, 1942, ready for shipment to the South Pacific. On December 31, they arrived at Tulagi and were assigned to MTBRON 2. *PT-111* was sunk on February 1, 1943, by IJN destroyer gunfire off Guadalcanal, and *PT-112* suffered a similar fate on January 11, 1943. (NHHC 19-N-35467)

destroyer suffered no critical damage. With a reduced speed of 18kn, *Hatsukaze* was able to return to the Shortlands under the escort of three destroyers and then made its way to Truk Atoll for emergency repairs. *Hatsukaze* reached Japan in mid-April but did not return to service until August.

PT-112 launched four torpedoes at *Kawakaze*, the third ship in column. The boat's crew also claimed a hit, but the destroyer was undamaged. In return, *PT-112* was hit twice and sunk; the entire crew survived.

Aside from heavy damage to one destroyer, the IJN had moderate success getting more supplies to the Guadalcanal garrison. The garrison reported that it had recovered 250 drums with about 30 tons of food and supplies.

The grinding contest of attrition and the inability to move reinforcements or even a minimal amount of supplies to Guadalcanal made it apparent to the Japanese that the island could no longer be held. Therefore the Tokyo Express of January 14 included a key passenger: an officer from the 8th Area Army with orders for the 17th Army on Guadalcanal to evacuate the island. Also aboard was a battalion of 750 men to act as a rear guard during the retreat. Nine destroyers made the run down The Slot. Again, PT boats were present to contest their arrival, but with the help of Japanese floatplanes providing cover, the Americans were brushed aside and every destroyer reached Cape Esperance to unload its complement of troops. On the way

Elco 77ft PT boat *PT-43* was part of a major American effort to interfere with the Tokyo Express on January 10–11, 1943. *PT-43*'s skipper selected the Kagerō-class destroyer *Tokitsukaze* for attack, but after a faulty powder charge on the boat's torpedo tubes revealed its location, the destroyer scored a 5in shell hit in the boat's engine room. With no power, the crew abandoned *PT-43*. The boat washed up on shore on the northwestern part of Guadalcanal well behind Japanese lines. The New Zealand corvette *Kiwi* shelled the boat to prevent it from falling into enemy hands. This is *PT-43* on February 16, 1943, after the area had been captured by American troops. (NHHC USMC 53371)

back to the Shortlands, however, American dive-bombers damaged two of the ships. After a period of deep reflection, as could only happen in the IJA in which orders were often up for debate, the commander of the 17th Army agreed to conduct a withdrawal as ordered.

THE JAPANESE EVACUATION

On January 20, the 17th Army issued orders for Operation KE – the evacuation of Guadalcanal. This set up the final runs of the Tokyo Express to Guadalcanal. For the evacuation, which was to be completed in three runs, the IJN gathered 21 destroyers at the Shortlands. Among these were the units of Destroyer Squadron 10, which was regarded as the finest destroyer flotilla in the IJN. It received the most modern destroyers and was usually assigned to escort the carriers. Rear Admiral Kimura Susuma, commander of the 10th Destroyer Squadron, was appointed to lead the evacuation, but he was wounded on January 19. His place was taken by Rear Admiral Hashimoto Shintarō. Operation KE was carefully planned, with the Americans not realizing its true intent until after it was completed.

The first evacuation run got underway on February 1 when 20 destroyers departed the Shortlands and headed down The Slot. The approaching Japanese were detected and 92 American aircraft were dispatched from Henderson Field. Only a single IJN destroyer was damaged and rendered unable to continue. Awaiting them were 11 PT boats, the largest number yet mustered to contest the Tokyo Express. *PT-48* and *PT-111* were positioned southwest of Savo with *PT-39* and *PT-47* stationed 2NM southeast of Savo. Two strike groups were organized with *PT-37*, *PT-59*, and *PT-115* waiting off northwestern Guadalcanal and *PT-36*, *PT-109*, *PT-123*, and *PT-124* spread across from Savo to Cape Esperance.

Japanese floatplanes attacked *PT-48* and *PT-111* before they got a chance to tangle with the destroyers. Neither was damaged. At about 2245hrs off Savo, *PT-48* fired all

Construction of the Yūgumo class continued after the start of the war, with 19 eventually being built. This is *Makigumo* after being completed in March 1942. The destroyer enjoyed a short career before being sunk off Guadalcanal on February 1, 1943. (Yamato Museum 071577)

four of its torpedoes with no success and then retired to hide off Savo. *PT-111* closed to within 500yd of *Kawakaze* and fired two torpedoes. Both missed, and the boat was taken under accurate fire by *Kawakaze*. At 2254hrs, *PT-111* was hit and set ablaze. Two crewmen were killed.

As the IJN destroyers approached Cape Esperance, *PT-37*, *PT-59*, and *PT-115* sprang into action. Under Japanese floatplane attack, the Americans pressed their attacks. *PT-115* closed to within 500yd before launching two torpedoes at a target, and then launched its other two torpedoes at a second target. This bravery was not rewarded with a hit. At least two destroyers engaged *PT-115* with gunfire, but the boat survived by reducing speed to lessen its wake and then running into a rainsquall. *PT-59* used the same rainsquall for cover. The final boat of the group, *PT-37*, was not so lucky. After firing all its torpedoes, accurate Japanese gunfire turned the boat into a flaming wreck. Only one crewman survived the resulting explosion.

Two more PT boats raced down from their position south of Savo to enter the fray. *PT-123* never made it to the combat area. A Japanese floatplane conducted a surprise attack and with unerring accuracy placed a bomb on the stern of the boat. *PT-123* was set afire and abandoned; four crewmen were lost. The second boat, *PT-124*, was able to press its attack. Three torpedoes were directed at a target and hits were claimed.

Just before 0200hrs on February 2, the Japanese finished loading 4,935 men aboard the destroyers and were preparing to depart. One of the screening destroyers, the Yūgumo-class *Makigumo*, was returning to Cape Esperance after chasing a PT boat back to Tulagi when a large explosion was recorded at 0145hrs. The cause remains unclear, but the Japanese believed it was a mine. This was possible as on February 1, three USN destroyer minelayers deployed 255 Mk 6 mines parallel to the shore from Doma Reef halfway to Cape Esperance. It is also possible that the explosion was caused by one of *PT-124*'s torpedoes. In any event, the result was that the destroyer was left without power. With no time to contemplate repairs, the Japanese commander ordered *Makigumo* to be scuttled. *Yūgumo* was assigned the task of taking off the crew and sending the destroyer to the bottom with torpedoes.

The Japanese were encouraged by the success of the initial run. On February 4, 20 destroyers departed the Shortlands for Cape Esperance and Kamimbo Bay. After suffering damage to one destroyer from air attack, the remaining ships arrived at their

destinations. No PT boats were sent out that night. Another 3,921 men were loaded on the IJN destroyers before they headed north to the Shortlands. On February 7, the third and final run to Guadalcanal repeated the pattern of the second. A total of 18 destroyers departed the Shortlands and faced American air attacks around 1800hrs. Despite the efforts of the fighters providing cover, one destroyer was hit and moderately damaged. The rest of the ships pressed on. Again, no American naval force awaited the final Tokyo Express run off Guadalcanal, allowing another 1,796 men to be rescued.

THE SOLOMONS CAMPAIGN

Following the capture of Guadalcanal, the Americans decided to continue their drive up the Solomons. The focus of the campaign in the Central Solomons was the airfield at Munda on New Georgia. Before landing on New Georgia directly, the Americans conducted a series of preliminary operations. On June 30, Rendova, located just 5NM across the Blanche Channel from Munda, was assaulted. Caught by surprise, the Japanese still managed to mount a series of air attacks. The attack transport *McCawley* was hit by an aerial torpedo. As salvage efforts continued into the night, two other torpedoes hit the ship at 2023hrs, sending it to the bottom. The next day it became apparent that the source of the attack was a force of six PT boats sent to patrol the Blanche Channel. The "friendly" fire incident resulted in tighter command arrangements for the PT force and a determination not to mix PT boats with other USN vessels in the same water space during the same period of time.

With New Georgia under threat, the Tokyo Express was reinstituted to reinforce the defense of Munda. IJN destroyers were employed to land troops on the neighboring island of Kolombangara; this force was then moved by barge to New Georgia. The first appearance of the new Tokyo Express was on the night of June 30/July 1, when the light cruiser *Yūbari* led nine destroyers into the Blanche Channel to bombard Rendova. Three PT boats were on patrol. After the *McCawley* incident they approached the unknown group of ships warily. The Japanese opened fire, but using smoke and evasive maneuvers, the boats escaped unharmed. The Japanese bombardment was wide of the mark, but no IJN ships suffered damage.

On July 2, the Americans landed on New Georgia. Though only 5 miles from Munda Airfield, the attack bogged down. Both sides settled in for a prolonged fight. To mount a defense and conduct a planned counterattack, the Japanese moved many troops to Vila on the southern end of Kolombangara. Unlike the Guadalcanal campaign during which the USN was reluctant to commit large ships to contest the Tokyo Express, by 1943 the preponderance of naval strength had swung in favor of the Americans. Accordingly, the USN actively sought to interdict the Tokyo Express using cruisers and destroyers. On the nights when the large ships were operating, the PT boats were ordered to stay clear. Thus, the battle against the Tokyo Express shifted away from the PT force. Instead, boats were concentrated against Japanese barge traffic. Operating out of two bases, one on Rendova and one on New Georgia, four PT squadrons were involved in the campaign with about 52 boats.

This view shows *PT-105* at high speed during exercises off the US East Coast with other boats of MTBRON 5 in July 1942. *PT-105* was completed the month before, missing the Guadalcanal campaign but fighting in the Central Solomons. (NHHC NH 97974)

The only major attempt by PT boats to derail the Tokyo Express occurred on the night of August 1/2. The Japanese planned to send four destroyers to Vila through Blackett Strait. To reduce the Americans' ability to react, 18 Japanese bombers were dispatched to raid the Rendova PT base during the day on August 1. Two boats were destroyed but enough remained for the Americans to make a major effort. Some of the boats were now radar equipped; combined with foreknowledge of the Japanese plan through signals intelligence, the Americans hoped to mount an ambush on the unsuspecting IJN destroyers.

Despite the loss of the two PT boats from Japanese air attack, the skippers of 15 boats met with Commander Thomas G. Warfield, commander of the boats based at Rendova, to discuss the details of the mission. Using the Ferguson Passage, the boats would establish blocking positions between Gizo and Kolombangara islands. The force was divided into four divisions. One division included *PT-109*, *PT-157*, *PT-159*, and *PT-162* positioned the farthest north, nearly midway up Kolombangara's west coast. Each of the divisions was assigned a location where an interception of the IJN destroyers was considered likely.

PT-159 was the leader of the northernmost division and was radar equipped. After getting radar indications of the approaching destroyers, the boat's skipper fired his torpedoes from about 2,000yd. Because they were fired at excessive range, all missed. *PT-157* fired two torpedoes with no success. Both boats escaped behind smoke and by using evasive maneuvers and left the other two boats of the division behind.

Farther to the south, the Japanese encountered another group of PT boats. *PT-171* sighted a target and launched all four of its torpedoes. The radar-equipped boat in the division, *PT-107*, was also able to identify a target and likewise launched four torpedoes. None of the eight torpedo launches resulted in success. A division of three boats to the southeast heard and saw signs of the encounter and closed the range. All 12 torpedoes aboard the three boats were launched, but none found a target. After the IJN destroyers brushed aside this group, they proceeded to Vila and unloaded their 902 troops by 0145hrs on August 2.

Warfield ordered the PT boats that had fired all their torpedoes to return to base. This included all four of the radar-equipped boats, which left the remaining boats blind. Three boats, *PT-109*, *PT-162*, and *PT-169*, were ordered to remain in Blackett Strait to intercept the IJN destroyers as they came back north. None of the boats had radar, and the night was cloudy, moonless, and foggy. The boats proceeded at low speed to avoid creating a large wake that could be noticed by Japanese aircraft. The Fubuki-class destroyer *Amagiri*, steaming at high speed, spotted *PT-109* and its captain steered to ram the boat. The crew of *PT-109* had less than ten seconds to get the engines up to speed and evade the oncoming destroyer, which was insufficient time to react. *Amagiri* sliced *PT-109* into two sections, leading to the survival story of the crew led by its famous skipper as described earlier. The IJN destroyers were otherwise unhindered on their return trip. The biggest PT operation of the campaign was a total failure.

For the remainder of the campaign, the PT boats were employed on barge-busting duties. Initially poorly armed to deal with armored Japanese barges, the boats received 37mm and 40mm guns able to deal with any barge. The heavily armed and shallow draft boats seemed ideally suited to anti-barge operations in the Central Solomons, but this did not prove to be the case. By August 18, the Japanese moved their New Georgia garrison through the PT boat blockade by barge to Kolombangara. The Allies attempted to blockade Kolombangara from August 25 through October 3. Once again, the PT-led effort to stop barge traffic was unsuccessful, and most of the Japanese garrison escaped.

PT boats were enough of a factor in Japanese planning that they planned an air attack on the PT base at Lumbari Island on August 1 before a Tokyo Express run. In the raid, a single bomb destroyed *PT-117* and *PT-164*; this is *PT-164* after the raid. (NHHC NH 44494)

FOLLOWING PAGES

In the most famous PT boat incident of the entire Pacific War, the IJN's Fubuki-class Special Type destroyer *Amagiri* surprised and then rammed the Elco 80ft PT boat *PT-109* in the early hours of August 2, 1943. The incident may have gone largely unknown if not for the fact that the skipper of *PT-109*, Lieutenant (j.g.) John F. Kennedy, was fated to become a future president of the United States.

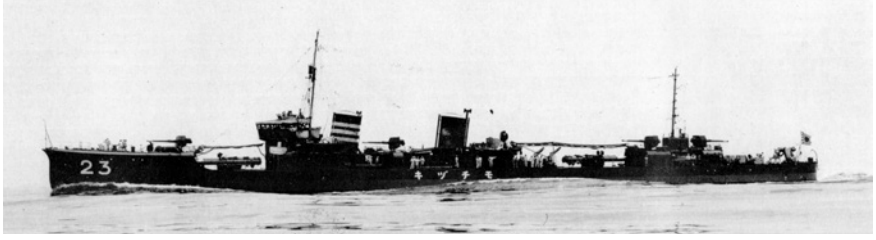
ANALYSIS

USN PT boats were designed to attack large warships with torpedoes; and off Guadalcanal, they had numerous opportunities to perform this mission. These encounters all took place at night, seemingly presenting the boats with an ideal opportunity to inflict damage. Nevertheless, most actions between PT boats and the Tokyo Express were bloodless. During the entire Guadalcanal campaign, the boats succeeded in scoring only three confirmed torpedo hits, one of which failed to explode. These rare successes resulted in the sinking of one IJN destroyer and heavy damage to another. It is possible that another ship was hit by a PT-boat-launched torpedo, but Japanese sources indicate that the damage was inflicted by an exploding mine.

PT boat-launched torpedo hits off Guadalcanal

Ship	Date	Description
Mochizuki	November 8, 1942	Japanese reported being struck by a torpedo that failed to explode
Teruzuki	December 11, 1942	One torpedo hit aft caused fires that resulted in the destroyer's loss
Hatsukaze	January 10, 1943	One torpedo hit caused heavy damage, but the destroyer survived
Makigumo	February 2, 1943	Destroyer scuttled after a probable mine strike, though a PT boat torpedo hit remains possible

Clearly, the torpedo marksmanship of the PT boat skippers was horrendous. This was true even from the close ranges (400–500yd) at which many of the attacks were made. Why was this the case? Part of the problem was the torpedoes themselves, though it was not recorded how many torpedoes made erratic runs. Perhaps some were fired within the 300yd range that the torpedoes required to arm, but the Japanese reported only a single torpedo dud throughout the campaign. Added to the weak performance



This view of the Mutsuki-class destroyer *Mochizuki* dates from August 1932. During many South Pacific missions, *Mochizuki* had a close encounter with Tulagi-based PT boats and was struck by a torpedo that failed to explode on November 8, 1942. The destroyer was sunk by air attack off New Britain on October 24, 1943. (Yamato Museum 071886)

of the Mk VIII torpedo was poor USN training on its employment. In general, PT boat training for torpedo attacks was unrealistic. Once deployed to a combat area, there were no torpedoes or opportunities to improve proficiency. The bottom line was that torpedo guidance was dependent on guesswork by PT boat skippers, who were most often under fire and operating under low-visibility conditions.

Likewise, Japanese marksmanship against PT boats was also horrendous. This is more understandable, however, given the supreme difficulty of hitting a low-freeboard maneuvering small craft at night, which was usually making smoke. Even with these difficulties in mind, however, the list of Japanese successes against PT boats during the Guadalcanal campaign was small. It took the Japanese two months to sink their first PT boat; and as the table below indicates, overall PT boat losses were low and personnel casualties were light.

PT boat losses off Guadalcanal

Boat	Date	Description
PT-44	December 12, 1942	Sunk by destroyer gunfire; ten killed
PT-43	January 10, 1943	Sunk by destroyer gunfire; three killed
PT-112	January 10, 1943	Sunk by destroyer gunfire; one wounded
PT-37	February 1, 1943	Sunk by destroyer gunfire; 11 killed
PT-111	February 1, 1943	Sunk by destroyer gunfire; two killed
PT-123	February 1, 1943	Sunk by a floatplane bomb; four killed

The actual damage to the Tokyo Express misses the point, however. The Americans never expected that a small number of PT boats could interdict the Tokyo Express, but they did hope to affect its operations and reduce its effectiveness. In the later stages of the Guadalcanal campaign, this was accomplished. By November, the IJN's Eighth Fleet headquarters in Rabaul, commander of the units involved in the Tokyo Express, observed to Combined Fleet headquarters that the PT force operating from Tulagi forced a reduction of the unloading period for the destroyers once they arrived off Guadalcanal.

On occasion, the PT boats had an even greater impact. The best example of this was the actions of the eight boats that clashed with the Tokyo Express on December 7, 1942. In a critical moment in the campaign, the Tokyo Express was turned back. It would not be an exaggeration to state that in terms of impact the PT operation on December 7 was their most important of the war. Keep in mind that on November 29–30, it required a major USN cruiser–destroyer force to achieve a similar

result, but it incurred major losses in the process. Increasingly difficult Tokyo Express operations made the IJN re-think the entire process of supplying the Guadalcanal garrison. So serious was the concern that the constant loss of destroyers would cripple the IJN's capability to conduct a decisive battle against the USN in the future, that on December 8 the Combined Fleet informed the IJA that it would stop destroyer supply operations immediately. The IJN eventually relented, but the PT boats had contributed to the near-total blockade of Guadalcanal at little cost to the USN.

It should also be noted that the PT boats were ideal platforms for shooting-up all the supply drums that the Japanese garrison failed to collect the morning after a Tokyo Express run. Overall, it cannot be denied that the boats were a cost-effective measure to attack the only viable method the IJN had to move men and supplies to Guadalcanal.

For the Japanese, the efforts of the PT boats almost always constituted a nuisance, not a serious threat to the Tokyo Express. The best defense against PT boat attacks was high speed and a sharp lookout in order to make evasion maneuvers against torpedoes. Accurate gunfire was effective in dissuading the boats from getting too close. The addition of floatplanes by the Japanese to provide cover against the boats proved a very effective countermeasure.

With one exception (December 7) when the Tokyo Express had to get through, it did. An example was the evacuation of the garrison on Guadalcanal in February 1943. Over the course of three runs, 10,652 men from the garrison were saved. The price for this success was the loss of *Magikumo* and moderate damage to three more destroyers, but none of this was caused by PT boats. In the face of American air and naval dominance around Guadalcanal, almost all of the surviving garrison was rescued and lived to fight another day. The USN declined to commit major combatants to disrupt the evacuation of the island and left the work to expendable PT boats. After a major effort to counter the first evacuation run during which three PT boats were destroyed, the PT squadron was unable to mount a repeat performance. The main reason why the evacuation succeeded was a failure by the Americans to discern Japanese intentions.

The efforts of the Tokyo Express were ultimately unsuccessful. This was not because Tokyo Express missions themselves were unsuccessful, but because it was impossible for IJN destroyers to support a large Japanese garrison in the face of sustained American air and naval pressure. For the Japanese to have committed almost 30,000 men to Guadalcanal with no reliable method to supply them was criminally stupid.

During the Solomons campaign, the same patterns were apparent when PT boats were used to interdict the Tokyo Express. On the only major attempt to do so (August 1–2), the operation did not turn out as the Americans planned. Of the 24 torpedoes fired from eight PT boats, not a single hit was scored against the advancing IJN destroyers. The PT boats were handled very poorly. Warfield's concept of tracking the battle from base and adjusting the boats' deployments by radio was hopelessly impractical. Ordering the four radar-equipped boats to depart the area was obviously an error. As a result, boats without radar proceeded aimlessly in the fog and darkness, unable to locate the IJN destroyers. Boats fought individually, instead of fighting as divisions. Communication between boats was totally lacking. The result was total failure and proved that in a fight between IJN destroyers and USN PT boats, the smaller boats were always at a disadvantage.

AFTERMATH

Concurrent with the Solomons campaign, PT boats were also active in the New Guinea campaign. Beginning in December 1942, they were involved in operations against IJN submarines and barges running supplies to garrisons in Japanese-held areas of the island. By the end of the New Guinea campaign in November 1944, PT boats in 14 PT squadrons claimed hundreds of barges. Almost 180 boats were involved in the campaign under the control of the USN Seventh Fleet.

The Seventh Fleet was known as "MacArthur's Navy" and was slated to play a leading role in General MacArthur's campaign to recapture the Philippines. The initial invasion was set for October 1944 on Leyte in the Central Philippines. As part of this massive operation, the Seventh Fleet was allocated five PT squadrons with 45 PT boats.

On October 13, all 45 PT boats departed their base at the northwestern part of New Guinea to make the 1,200NM transit to Leyte. In total, the movement took eight days and represented the longest movement by a large group of PT boats during the Pacific War. All 45 boats completed the transit. On October 22, they began nightly patrols inside Leyte Gulf.

A veteran of many transport missions to New Guinea and in the Solomons during 1942–43, the Mutsuki-class destroyer *Uzuki* was torpedoed and sunk by *PT-490* and *PT-492* off Cebu in the Philippines on December 12, 1944. (NHHC NH 3066)

The American landing on Leyte prompted the IJN's Combined Fleet to make an all-out effort to repel the invasion. Though the Japanese plan was totally flawed, it did set up the largest battle in naval history. One of the four engagements that made up the battle of Leyte Gulf was fought in Surigao Strait by units of the Seventh Fleet. Given plenty of warning that an IJN force composed of two battleships, one heavy cruiser, and four destroyers would attempt to force the strait on the night of October 24/25, Vice Admiral Thomas C. Kinkaid, commander of the Seventh Fleet, set up an elaborate ambush. The first forces to make contact with the approaching Japanese were 39 PT boats.

For the first time since the encounter with IJN destroyers in Blackett Strait on August 2, 1943, PT boats had a chance to duel with large combatants of the Combined Fleet. The 39 boats were deployed in 13 different groups forming a skirmish line in the southern approaches to Surigao Strait. Each group was ordered to make independent attacks on the approaching destroyers, but only after providing a detection report. When the boats reached their stations, they were ordered to lay to so as to avoid leaving any wake and to create the best conditions for using their SO radars, and to conduct clear communications.

The Japanese commander considered it likely that he would encounter PT boats, so he deployed a scouting unit of the heavy cruiser and three destroyers. The rest of his force trailed behind. At 2235hrs on October 24, the PT boats' part of the battle opened. One of the boats from Section 1, *PT-131*, gained radar contact on the main body of the IJN force. *PT-131* closed for a torpedo attack, joined by *PT-130* and *PT-152*. At 2252hrs, the Shiratsuyu-class destroyer *Shigure* detected the three boats and took them under fire. Two boats were slightly damaged, and none could get close enough to launch their torpedoes. Their contact report provided the first conformation that an IJN force was moving into Surigao Strait, however.

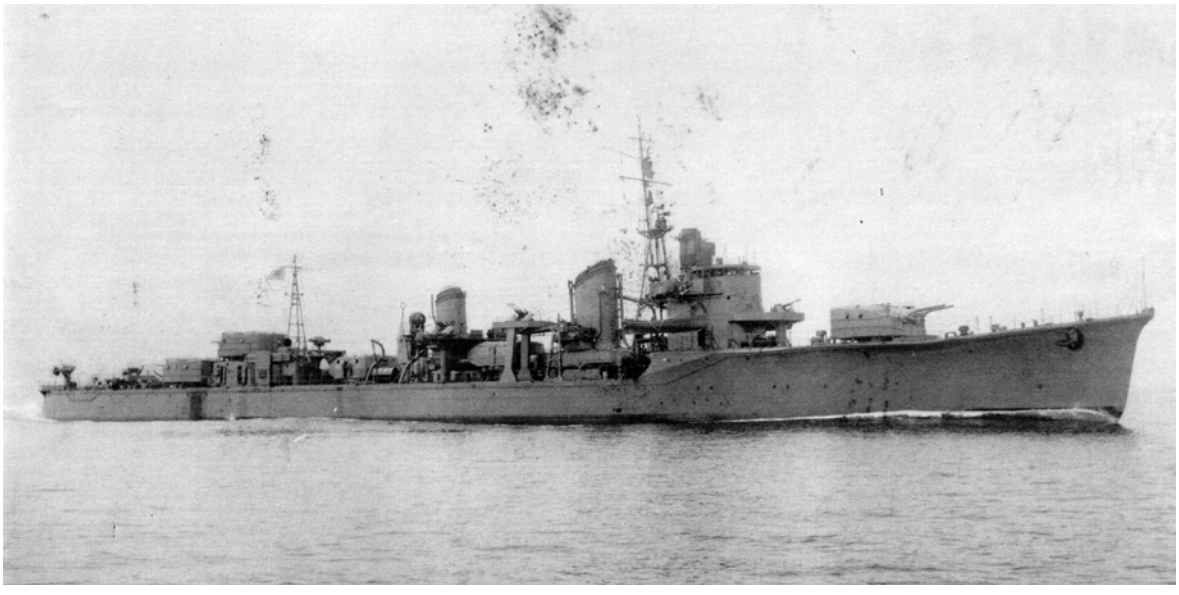
Section 3 spotted the IJN scouting force at 2350hrs. Both *PT-146* and *PT-151* fired a single torpedo at the heavy cruiser *Mogami* but missed. By the time Section 6 began its attack, the IJN force had reunited. *PT-134* fired three torpedoes at a battleship at 0205hrs, but again all the torpedoes missed. At 0207hrs, the boats of Section 9 fired four torpedoes at the destroyers in the van of the Japanese formation. *PT-490* closed to within 400yd before launching its torpedoes, but the crew's bravery was not rewarded with success. In return, *PT-490* was hit twice by gunfire, and *PT-493* was hit three times. *PT-490* suffered two crewmen killed and ran aground; *PT-493* also ran aground and later sank. The last boats to attack were those of Section 8. *PT-523*, *PT-524*, and *PT-526* fired six torpedoes at *Mogami*, but once again they all missed.

Two hours after the first IJN force, a second force of two heavy cruisers, one light cruiser, and four destroyers approached Surigao Strait. The first indication of this second force was provided by a contact report from a PT boat at 0038hrs on October 25. *PT-134* launched an ineffective torpedo attack on the second force at 0315hrs. *PT-137* launched an attack at 0325hrs after closing to within 900yd of an IJN destroyer. One of the torpedoes passed under the destroyer and continued on to hit the Nagara-class light cruiser *Abukuma*. The torpedo struck in the forward boiler room, killing 30 and reducing *Abukuma*'s speed to 10kn.

MTBRON 23 was commissioned on June 28, 1942, at the Higgins Industrial Canal Plant in New Orleans. Individual PT boats were not commissioned, but squadrons were. These Higgins boats were completed with four torpedo tubes, two twin .50-caliber machine guns, and a single 20mm gun. (NHHC NH 44483)

The battle of Surigao Strait was a crushing American victory. Only a single destroyer from the first IJN force survived. The second group of PT boats launched an effective torpedo attack before retiring. *Abukuma* was forced to leave formation and was later sunk by air attack. PT boat attacks played a small, but important, role in the battle's outcome. Insufficient practice with torpedoes was probably a factor in the lack of success against both IJN forces. The first force ran the gauntlet of PT boats without suffering any damage and without its formation losing cohesion. In all, 30 of the 39 boats made contact with the force and launched a total of 34 torpedoes. Only a single hit was recorded. Ten PT boats were hit, but only one was lost. Casualties were light at three dead and 20 wounded.

The battle of Leyte Gulf ended as a decisive victory for the Americans, but the naval campaign in the Philippines was far from over. Despite their crushing losses, the Japanese began a series of convoys to move ground forces to the western side of Leyte. To interdict this movement, the Americans employed aircraft and surface forces, including PT boats. The fourth IJN convoy was attacked by four PT boats in Ormoc Bay on November 9, but the action resulted in no damage to either side. On November 11, two other boats attacked a different convoy southwest of Leyte. The attack was driven off and *PT-321* was lost. On November 28, a small IJN convoy was



The final Yūgumo-class destroyer to be completed was *Kiyoshimo*, shown here in May 1944 after being turned over to the IJN. Ships built later in the war were completed with radar and a much larger antiaircraft battery, as shown here on *Kiyoshimo*. After a short career, the destroyer was sunk by PT attack in the Philippines on December 27, 1944. (Yamato Museum 071585)

attacked by four boats after reaching Ormoc. *PT-127* and *PT-331* launched four torpedoes and accounted for a submarine chaser and a patrol boat. The two other boats attacked the transports, but their torpedoes missed.

The final IJN convoy departed Manila on December 9 and arrived near Ormoc on December 12. Among the convoy's escorts was the veteran Mutsuki-class destroyer *Uzuki*, which was attacked by *PT-490* and *PT-492* off Cebu Island. The PT boats used their radars and the coast of Leyte as cover to approach within 1,000yd of the destroyer to launch six torpedoes. Two of these hit at around 0100hrs; within minutes, *Uzuki* sank with the loss of 170 officers and men.

One more significant exploit awaited the PT boats during the Philippine campaign. On December 15, American forces landed on Mindoro Island in the western Philippines. Nine days later, the IJN sent a force of one heavy cruiser, one light cruiser, and five destroyers to bombard the beachhead. The operation was poorly conceived, but it did take the Americans by surprise. The only naval units in the area were 22 PT boats. After surviving a series of air attacks, the IJN force approached the beachhead on December 26. Of the 22 PT boats, only nine were capable of being deployed off the beachhead. The IJN force was detected by radar at 2048hrs, but the Japanese failed to detect the PT boats until 2155hrs. Fear of PT attack and air attack delayed the IJN force's advance. Several ships were hit by bombs, including the brand-new Yūgumo-class destroyer *Kiyoshimo*. The crippled ship was later attacked by *PT-221* and *PT-223*. The latter boat closed the destroyer and launched two torpedoes. One hit at 0105hrs on December 27, sinking *Kiyoshimo* with the loss of 82 crewmen.

By the end of the war, 19 PT squadrons were assigned to the Seventh Fleet and six to the Pacific Fleet. Four new squadrons were still in the United States, and the last was at the training base at Melville. Some 370 PT boats were in commission. During the war, 69 boats were lost, with grounding being the largest single loss factor by far. Overall, the level of effort put into the formation and growth of the PT force was considerable. The misery inflicted on the Japanese was much greater.

BIBLIOGRAPHY

Bulkley, Robert J., Jr. (2003). *At Close Quarters*. Annapolis, MD: Naval Institute Press.

Bureau of Ships (1945). *Know Your PT Boat*. Washington, DC: Navy Department.

Donovan, Robert J. (1961). *PT-109: John Kennedy in World War II*. New York, NY: McGraw-Hill.

Frank, Richard B. (1990). *Guadalcanal*. New York, NY: Random House.

Friedman, Norman (1987). *U.S. Small Combatants*. Annapolis, MD: Naval Institute Press.

Hara Tameichi (2007). *Japanese Destroyer Captain*. Annapolis, MD: Naval Institute Press.

Johnson, Frank D. (1983). *United States PT-Boats of World War II in Action*. Poole: Blandford Press.

Konstam, Angus (2005). *PT Boat Squadrons*. Hersham: Ian Allan Publishing.

Lloyd, Keith Warren (2023). *Dark Nights, Deadly Waters*. Essex, CT: Lyons Press.

Morison, Samuel Eliot (1975). *History of United States Naval Operations in World War II, Vol. VI. Breaking the Bismarcks Barrier: 22 July 1942–1 May 1944*. Boston, MA: Little, Brown & Co.

Polmar, Norman & Samuel Loring Morison (1999). *PT Boats at War, World War II to Vietnam*. Osceola, WI: MBI Publishing.

Stille, Mark (2013a). *Imperial Japanese Navy Destroyers 1919–45 (1): Minekaze to Shiratsuyu Classes*. New Vanguard 198. Oxford: Osprey Publishing.

Stille, Mark (2013b). *Imperial Japanese Navy Destroyers 1919–45 (2): Asashio to Tachibana Classes*. New Vanguard 202. Oxford: Osprey Publishing.

United States Naval Administration in World War II, Commander-in-Chief Pacific Fleet, Motor Torpedo Boat Squadrons, World War II War Diaries, Other Operational Records and Histories for the period 09/01/1939–05/30/1946

US Navy, Motor Torpedo Boat Manual, February 1943.

www.combinedfleet.com for tabular records of movements of various IJN ships.

INDEX

References to illustrations are shown in **bold**.

Akatsuki-class destroyers 27–28: *Akatsuki* **17**, **27**, **61**; *Inazuma* 27
Akizuki-class destroyers 32, 33, 34: *Akizuki* **17**, **61**; *Niizuki* 32; *Teruzuki* 7, 32, 47, **58–59**, 60, **61**, 72
Asabio-class destroyers 6, 30, 31: *Asabio* **6**; *Minegumo* 30; *Natsugumo* 30
attack transports (US): *McCawley* 67

Calvert, Cdr. Allen P. 39, 60
cruisers (Jpn) 14, 26, 54, 56, 76, 78: *Abukuma* 76, 77; *Jintsū* 42, 46; *Mogami* 76; *Naka* 42; *Tenryū* 55; *Yūbari* 67
cruisers (US) 4, 5, 16, 46, 56, 67: *Minneapolis* 57; *New Orleans* 57; *Northampton* 47, **57**; *Pensacola* 57; *Portland* 56
Cushing torpedo boat 8–9

destroyers (Jpn)
  AA guns **15**, 26, 27, 28, 29, 30, 31, 32, 34, 48
  bases: Norfolk Is. 45, 56, 64, 65, 66, 67; Truk Atoll 26, 46, 50, 64
  crews 42–44, 57, 60, 61, 66
  deck guns 14, **15**, 16, **17**, 26, 27, 28, 29, 30, 31, 32, **33**, 34, 57, 60, 61, 64, 66, 74
  depth charges 9, 19, 24, 54
  naval treaty limitations 16, 27, 28, 42
  torpedoes 13, 16, **17**, 26, 27, 28, 29, 30, 31, 32, **32**, **33**, 42, 43, 47, 66, 67
destroyers (US) 4, 5, 9, 16, 46, 67
Dupre, Jr., Capt. Marcy M. 38

Eastern Solomons, battle of 7, 44, 46, 50
Elco 70ft PT boats: *PT-10* to *PT-16* 10, 12; *PT-17* 10, 36; *PT-18* to *PT-19* 10, 12
Elco 77ft PT boats **11**, 12, 18, 19: *PT-20* to *PT-35* 12; *PT-36* 12, 56, 57, 65; *PT-37* 12, 53, 54, 55, 56, 57, 65, 66, 73; *PT-38* 12, 53, 54; *PT-39* 12, 53, 54, 55, 65; *PT-40* 12, 56, 57, 60, 61; *PT-41/42* 12; *PT-43* 12, 56, 57, 61, **65**, 73; *PT-44* 12, 56, 57, 60, **62–63**, 73; *PT-45* 12 53, 54, 60; *PT-46* 12, 53, 54; *PT-47* 12, 56, 65; *PT-48* 12, 53, 54, 55–56, 57, 65–66; *PT-49* to *PT-58* 12; *PT-59* 12, 56, 57, 60, 65, 66; *PT-60* 12, 53, 54; *PT-61* 53, 54, 55; *PT-62* 12, **23**; *PT-63* to *PT-68* 12
Elco 80ft PT boats 12, 20–21: *PT-103* 20; *PT-105* 68; *PT-107* 68; *PT-109* 7, 16, 40–41, **40**, 56, 57, 65, 68, 69, **70–71**;*PT-110* 56; *PT-111* 61, **64**, 65, 66, 73; *PT-112* 61, **64**, 73; *PT-114* 60; *PT-115* 61, 65, 66; *PT-117* **20**, 69; *PT-118* 61; *PT-123* 61, 65, 66, 73; *PT-124* 61, 65, 66; *PT-127* 78; *PT-130/131/134/137/146/151/152* 76; *PT-157* **37**, 68; *PT-159* 68; *PT-162* 40, 68, 69; *PT-164* **69**; *PT-169* 40, 69; *PT-171* 68; *PT-321* 77; *PT-331* 78; *PT-490* 75, 76, 78; *PT-492* 75, 78; *PT-493/523/524/536* 76

Fubuki-class destroyers 15, 27: *Amagiri* **16**, 41, 69, **70–71**; *Asagiri* 27, 45; *Ayanami* 27; *Fubuki* **14**, **15**, 27; *Miyuki* 27; *Murakumo* 27

Ghormley, Vice Adm. Robert L. 53
Guadalcanal campaign 4, **5**, 49–50
  destroyers (Jpn), use of 4–5, 7, **15**, 16, **17**, 26, 27, 28, 29, 30, 31, 32, 39, 40–41, 43, 44–45, **45**, 46–48, 49, 50, 52, 54, 55, 56, 57, **58–59**, 60, 61, **62–63**, 64–65, 66–67, 72, 73–74, 76: kills 16, 41, 47, 57, **62–63**, 64, 66, 73; losses 5, 7, 26, 27, 28, 29, 30, 31, 32, 45, 46, 47, **58–59**, 60, 66, 72, 74
  PT boats, use of 4, 7, **11**, 38–39, **38**, 40–41, 42, 48, 52, 53–57, **57**, **58–59**, 60–61, **62–63**, 64, 65–66, 67, 72, 73–74, 76: kills 5, 7, 57, **58–59**, 60, 66, 72; losses 7, 16, 41, 60, 61, **62–63**, 64, **65**, 66, 73, 74

Hatsuharu-class destroyers 28, 29, 34: *Hatsuharu* **16**; *Yugure* 28
Higgins 78ft PT boats **13**, 21, **21**, 23, **24**, 77, **77**: *PT-71* to *PT-94* 12, 21; *PT-221* 78; *PT-223* 21, 78; *PT-265* to *PT-313*, *PT-450* to *PT-485*, *PT-791* to *PT-802* 21
Huckins 78ft PT boats 12: *PT-101* 40

Imperial Japanese Army forces 45–48, **45**, 49, 50, 64, 65, 74
  use of barges 7, 46, 47, 48, 52, 57, 67: PT boat attacks 6, 23, 40, 52, 67, 69, 75

Kagerō-class destroyers 6, 30–31, 43: *Amatsukaze* 43; *Arashi* 30; *Hagikaze* 30; *Hatsukaze* 7, 30, 61, 64, 72; *Kagerō* 30; *Kuroshio* 30, 57; *Oyashio* 30; *Takitsukaze* 61, 65; *Yukikaze* 31, **31**
Kennedy, Lt (j.g.) John F. 40–41, **41**, 69
Kinkaid, Vice Adm. Thomas C. 76
Koyanagi Tomiji, Rear Adm. 61

MacArthur, Gen. Douglas 18, 75
Momi-class destroyers: *Asi* 42; *Warabi* 42
Montgomery, Lt. Cdr. Alan R. 18, 53, **53**, 54
Mutsuki-class destroyers 26, 34: *Fumizuki* 26, **26**; *Kikuzuki* 26; *Mochizuki* 7, 26, 55, 72, 73, **73**; *Mutsuki* 26, 46; *Uzuki* 75, **75**, 78; *Yaiyo* 26

New Guinea campaign 36, 75

oilers (US): *Lackawanna* 53; *Tallulah* **64**; *Tappahannock* 53

Philippines campaign 9, 43, 75–78
PT boat tenders: *Jamestown* 7, 38, 53, 54; *Niagara* 36, **36**
PT boats, armament
  deck guns/cannons 9, **11**, **13**, 19, 20, 22, 23, **23**, **24**, **25**, 69
  torpedoes 7, 9, 10, **13**, 22, **22**, **25**, 38, 39, 40, 42, 43, 54, 55, 56, 57, 60, 61, 65–66, 68, 72–73, 74, 76, 77, 78
PT boats, bases: Florida I. 38, **39**; Lumbari I. 69, **69**; Nouméa 53; Rendova I. **37**, 40, 41, 67, 68; Russell Is. 40, **51**; Tulagi I. 4–5, 7, 36, 38, **39**, 40, **51**, 53, 54, 55, 56, 57, 60–61, 64, 73
PT boats, crews 35–36, **36**, 37, **37**, 38, **39**, 40, 41, **41**, 56, 60, 61, 66, 73, 76, 77
PT boats, experimental designs: *PT-1* to *PT-9*, *PT-69/70* 9–10, **9**, **10**, 12, **12**
PT boats, MTBRONs 18, 74: 1 9; 2 7, 9, 10, **10**, 18, 40, 53, 56, 57, **58–59**, 61, **62–63**, 64, 65, 66, 73; 3 18, 53–57, 60, 64, 65–66, 68, 69, **70–71**, 73; 4 36, 40; 5 68, **68**; 6 61, 65, 66, 69, 73; 7 76, 78; 9 68, 69; 10 68, 69, **69**; 12 76; 16 78; 21 77, 78; 23 **77**; 25 76; 33 76, 78; 36 76; Squadron Training Center 36, 40, 53; South Pacific 38

radar: (US) **13**, 24, 34, 68, 69, 74, 76, 78; (Jpn) 27, **29**, 30, 34, **78**
Robinson, Lt. Hugh M. 54, 55
Roosevelt, Pres. Franklin D. 9, 10

Shiratsuyu-class destroyers 29, 33, 43: *Harusame* **29**; *Kawakaze* 29, 34, 60, 64, 66; *Murasame* 29, 54; *Shigure* 76; *Suzukaze* 60, 61; *Yūdachi* 29
Solomons campaign 4, 5, 7, 20, 24, 52, 67
  destroyers (Jpn), use of 5, 6, 26, 27, 28, 29, 30, 31, 32, 43, 44, 52, 67, 68, 69, **70–71**, 74, 75: kills 5, 69, **70–71**; losses 26, 27, 28, 29, 30, 31, 32, 73
  PT boats, use of 6, 7, **37**, 52, 67–69, **70–71**, 74: kills 67; losses 7, **20**, 68, 69, **69**, **70–71**
Stiletto torpedo boat 8
submarines (Jpn) 24, 48, 56, 57, 75: *I-3* 7, 57, 60; *I-17/19* 56
Surigao Strait, battle of 76–77

Tameichi, Capt. Hara 43
Tanaka Raizō, Rear Adm. 45, 46–47, **47**, 48, 60, 61
Tassafaronga, battle of 43, 47, 48, 57
Turner, Rear Adm. Richmond K. **50**

US Marine Corps 50, 56: 1st Marine Div. 49, 50

Vandergrift, Maj. Gen. Alexander A. **50**, 53

Warfield, Cdr. Thomas G. 68, 69, 74

Yamamoto Isoroku, Adm. 48, 60
Yūgumo-class destroyers 6, 31, 43, 66: *Kiyonami* 31; *Kiyoshimo* 78, **78**; *Makigumo* 7, 31, 66, **66**, 72, 74; *Makiname* 31; *Naganami* **43**, *Ōnami* 31; *Takanami* 31, 47; *Yūgumo* 31, 66

OSPREY PUBLISHING
Bloomsbury Publishing Plc
Kemp House, Chawley Park, Cumnor Hill, Oxford OX2 9PH, UK
29 Earlsfort Terrace, Dublin 2, Ireland
1385 Broadway, 5th Floor, New York, NY 10018, USA
E-mail: info@ospreypublishing.com
www.ospreypublishing.com

OSPREY is a trademark of Osprey Publishing Ltd

First published in Great Britain in 2025
This electronic edition published in 2025 by Bloomsbury Publishing Plc

© Osprey Publishing Ltd, 2025

All rights reserved. No part of this publication may be reproduced or transmitted in any form or by any means, electronic or mechanical, including photocopying, recording, or any information storage or retrieval system, without prior permission in writing from the publishers.

A catalog record for this book is available from the British Library.

ISBN: PB 9781472860972; eBook 9781472860989;
ePDF 9781472860996; XML 9781472861009

Artwork by Edouard A. Groult
Maps by bounford.com
Index by Rob Munro
Typeset by PDQ Digital Media Solutions, Bungay, UK
Printed by Repro India Ltd.

Osprey Publishing supports the Woodland Trust, the UK's leading woodland conservation charity.

To find out more about our authors and books visit **www.ospreypublishing.com**. Here you will find extracts, author interviews, details of forthcoming events and the option to sign up for our newsletter.

Title-page photograph
PT-20 was planned to be the last Elco 70ft PT boat. When the USN opted for larger boats, it became the first of 49 examples of the Elco 77ft design. Launched in June 1941, *PT-20* won the first "Plywood Derby" and led the way to mass-production of Elco PT boats. (NHHC NH 44481)